

SEQUENCE LISTING

<110> Rockefeller University

<120> LYTIC ENZYMES AND SPORE SURFACE ANTIGEN FOR DETECTION AND TREATMENT OF BACILLUS ANTHRACIS BACTERIA AND SPORES

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<150> 60/555,916

<151> 2004-03-24

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<170> PatentIn version 3.1

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International Patent Classification Class

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FIG. 1 is a schematic diagram of the DNA sequence of the invention.

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FIG. 11: Sequence alignment

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tatataccct ctataagagg gatataagga gtgattttat gctggagttg ttatcagtac	20040
cattcgcagg tttaatttttc gccatagttg gcgaaaggct caaaggaaga gagagtgatc	20100
gaaagaaaat acaagtttttt tttgaagtaa gcggaattgc gatacgtaga gaggacaaat	20160
tacagtatcc agttttttctt gaacaaaaag aggatgaccg aagtacaact tatatatatc	20220
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aaggataata aaaagaaaaa aataattcca gatgtgaaat ttcgtgatga ggacagaata	21540
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FIG. 11

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ataaaagtgg tgtatccgca tttagggata caaggcgagt atttagtgga gaaaattgat 38520
aatggtgtgt tggaattggt agcagaagaa acaatgaaaa aaatacagga gtgattagga 38580
ttgaagaagt tatctaaaca agagctagca gctgtaatga cacattgtat ttcaacgctt 38640
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cataacgatac tcttttgataa taccactcct aaagaacgta gggaagcgac gatcagttta 38760
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 ggatttgaag agacttctca taagggtacgt gatggttgga aatgtcctga ttgtaattgga 39900
 ccaatggcgt ttcaacaggt gaataagaaa aaagaaagcg ccaagtgatg gtgcttttta 39960
 ttttgaggga ggatgaagga tggaaggaca ggagttaaca ttggaaaaga aagacagtat 40020
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 aatgtgcaga tgcgctggac aaattagaaa agattatgga taagtttaca aatcgaagtg 40320
 atacagtgga actctattgt gaaggtaaat tgttatcgaa gtctacagtt aatcatacag 40380
 ctgattcaat tcaatgtcgc ataataagga gagaagagct tggaggaagt gaacgctgat 40440

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gaagaaaccg cttagaccat gctgcgaatt tcattgttat aatctcacac gtgaaagata 40500
 ttgtgaggaa catagataca aagagaagga aacgcagcag gataagaata gatactacga 40560
 ccgattcaaa cgggacaaag agagtacggc tttctatagg tcaaaggcat gggaaagggt 40620
 aagagagcag gcactaatga gagacaaagg gttgtgccta cattgtaaga acaatagaaa 40680
 gattaaagtt gcagatatgg ttgaccatat cattccaatc aaagttgatc caagttttaa 40740
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 cgccgcccc 40869

<210> 3
 <211> 161
 <212> PRT
 <213> Bacillus anthracis

<400> 3

Met Ala Gly Arg Asn Lys Gln Pro Leu Ser Val Ile Gln Gly Lys Gly
 1 5 10 15

Arg Ser Asn His Ile Thr Lys Ser Glu Lys Asn Arg Arg Glu Lys Gln
 20 25 30

Glu Glu Ala Leu Arg Gly His Thr Asp Lys Ile Glu Ala Pro Ser Tyr
 35 40 45

Leu Thr Ala Ala Gln Lys Lys Glu Phe Asp Thr Leu Ala Ala Glu Leu
 50 55 60

Val Arg Leu Lys Ile Phe Ser Asn Leu Asp Val Asp Ser Leu Ala Arg
 65 70 75 80

Tyr Val Asp Ser Lys Asp Gln Tyr Ile Lys Met Val Arg Leu Leu Arg
 85 90 95

Lys Thr Lys Pro Ser Asp Asp Phe Lys Leu Tyr Ser Gln Met Gln Arg
 100 105 110

Ser Lys Asn Leu Leu Phe Asn Glu Cys Arg Ser Ser Ala Ser Asp Leu
 115 120 125

Thr Ser Gln Gln Lys Gln Ser Glu Ala Gln Lys Arg Phe Gly Asp Arg
145 150 155 160

Ile

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<210> 4
<211> 161
<212> PRT
<213> Bacillus anthracis
```

<400> 4

Met Ala Gly Arg Asn Lys Gln Pro Leu Ser Val Ile Gln Gly Lys Gly
1 5 10 15

Arg Ser Asn His Ile Thr Lys Ser Glu Lys Asn Arg Arg Glu Lys Gln
20 25 30

Glu Glu Ala Leu Arg Gly His Thr Asp Lys Ile Glu Ala Pro Ser Tyr
35 40 45

Leu Thr Ala Ala Gln Lys Lys Glu Phe Asp Thr Leu Ala Ala Glu Leu
50 55 60

Val Arg Leu Lys Ile Phe Ser Asn Leu Asp Val Asp Ser Leu Ala Arg
65 70 75 80

Tyr Val Asp Ser Lys Asp Gln Tyr Ile Lys Met Val Arg Leu Leu Arg
85 90 95

Lys Thr Lys Pro Ser Asp Asp Phe Lys Leu Tyr Ser Gln Met Gln Arg
100 105 110

Ser Lys Asn Leu Leu Phe Asn Glu Cys Arg Ser Ser Ala Ser Asp Leu
115 120 125

Gly Leu Thr Ile Thr Ser Arg Leu Lys Leu Val Ile Pro Glu Val Asp
130 135 140

Thr Ser Gln Gln Lys Gln Ser Glu Ala Gln Lys Arg Phe Gly Asp Arg
145 150 155 160

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Ile

<210> 5

<211> 565

<212> PRT

<213> Bacillus anthracis

<400> 5

Met Asn Trp Ile Met Glu Arg Val Phe Ala Tyr Cys Glu Asp Ile Leu
1 5 10 15

Asn Gly Lys Ile Asn Ser Cys Lys Lys His Arg Trp Ala Ile Glu Arg
20 25 30

Phe Ile Arg Asp Tyr Glu Glu Cys Gln Ser Glu Asp Ser Pro Phe Tyr
35 40 45

Phe Asp Gly Glu Ile Ala Glu Asp Phe Tyr Trp Phe Ala Lys Glu Phe
50 55 60

Lys His Val Glu Gly Ile Leu Ala Gly Glu Ser Val Glu Leu Thr Asp
65 70 75 80

Phe Gln Leu Phe Leu Ala Ala Asn Ile Phe Gly Phe Lys Lys Lys Ile
85 90 95

Asn Gly Ala Arg Arg Phe Arg Lys Val Phe Ile Gln Leu Ala Arg Lys
100 105 110

Asn Ala Lys Ser Gln Phe Leu Ala Ile Val Ala Ala Phe Cys Thr Phe
115 120 125

Leu Gly Asp Glu Lys Gln Arg Ala Tyr Ile Ala Gly Trp Thr Arg Asp
130 135 140

Gln Ser Ser Glu Val Tyr Glu Ala Val Lys Thr Gly Ile Ser Ser Ser
145 150 155 160

Glu Leu Leu Glu Gly Lys Trp Lys Glu Ala Tyr Ser Thr Ile Glu Ile
165 170 175

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Phe Lys Asn Gly Ser Val Val Val Pro Leu Ser Lys Glu Ala Arg Lys
180 185 190

Thr Gly Asp Gly Lys Asn Pro Ser Leu Gly Ile Val Asp Glu Tyr His
195 200 205

Ala His Glu Thr Asp Glu Ile Tyr Asp Val Leu Ser Ser Gly Met Val
210 215 220

Ala Arg Lys Glu Pro Leu Met Phe Ile Ile Thr Thr Ala Gly Phe Asp
225 230 235 240

Leu Ser Arg Pro Cys Tyr Arg Glu Tyr Glu Tyr Val Ser Asp Ile Leu
245 250 255

Asp Pro Ser Lys Asn Val Glu Asn Asp Asp Tyr Phe Val Met Ile Cys
260 265 270

Glu Leu Glu Lys Asn Asp Asp Ile Lys Asp Glu Ser Asn Trp Ile Lys
275 280 285

Ala Asn Pro Ile Val Ala Thr Tyr Glu Glu Gly Leu Glu Gly Ile Arg
290 295 300

Ser Asp Leu Lys Val Ala Leu Asp Arg Pro Glu Lys Met Arg Ala Phe
305 310 315 320

Leu Thr Lys Asn Met Asn Ile Trp Val Asp Lys Lys Asp Asn Gly Tyr
325 330 335

Met Asp Met Ser Lys Trp Gln Lys Cys Glu Val Asp Thr Phe Asp Phe
340 345 350

Ser Gly Ala Thr Leu Trp Ile Gly Gly Asp Leu Ser Met Thr Thr Asp
355 360 365

Leu Thr Ser Val Gly Trp Val Gly Met Asp Asp Glu Gly Asp Phe Ile
370 375 380

Val Gly Gln His Ser Phe Met Pro Glu Ala Arg Leu Lys Glu Lys Met
385 390 395 400

Ala Ile Asp Lys Val Arg Tyr Asp Leu Trp Ala Glu Gln Gly Tyr Leu

405

410

415

Thr Leu Thr Pro Gly Glu Met Val Asp Tyr Thr Ile Val Glu Ser Trp
420 425 430

Ile Glu Asn Phe Ser Lys Asp Lys Glu Ile Gln Glu Phe Asp Tyr Asp
435 440 445

Lys Trp Asn Ala Leu His Leu Ala Gln Asn Leu Glu Asn Lys Gly Phe
450 455 460

Val Cys Val Glu Ile Pro Gln Arg Ile Ala Asn Leu Ser Ile Pro Thr
465 470 475 480

Lys Asn Phe Arg Glu Lys Val Tyr Glu Lys Lys Val Lys His Asn Gly
485 490 495

Asp Pro Val Leu Phe Trp Ala Leu Asn Asn Ala Val Val Lys Met Asp
500 505 510

Asp Gln Glu Asn Ile Met Ile Ser Lys Lys Ile Ser Lys Asn Arg Ile
515 520 525

Asp Pro Ala Ala Ala Val Leu Asn Ala Phe Ser Arg Ala Met Tyr Gly
530 535 540

Ala Ser Val Arg Phe Asp Val Ser Glu Phe Ala Asn Lys Asp Phe Leu
545 550 555 560

Gly Lys Leu Trp Asn
565

<210> 6
<211> 565
<212> PRT
<213> Bacillus anthracis

<400> 6

Met Asn Trp Ile Met Glu Arg Val Phe Ala Tyr Cys Glu Asp Ile Leu
1 5 10 15

Asn Gly Lys Ile Asn Ser Cys Lys Lys His Arg Trp Ala Ile Glu Arg
20 25 30

It has been found that the present invention provides a method for the preparation of a polypeptide having a specific amino acid sequence.

Phe Ile Arg Asp Tyr Glu Glu Cys Gln Ser Glu Asp Ser Pro Phe Tyr
35 40 45

Phe Asp Gly Glu Ile Ala Glu Asp Phe Tyr Trp Phe Ala Lys Glu Phe
50 55 60

Lys His Val Glu Gly Ile Leu Ala Gly Glu Ser Val Glu Leu Thr Asp
65 70 75 80

Phe Gln Leu Phe Leu Ala Ala Asn Ile Phe Gly Phe Lys Lys Lys Ile
85 90 95

Asn Gly Ala Arg Arg Phe Arg Lys Val Phe Ile Gln Leu Ala Arg Lys
100 105 110

Asn Ala Lys Ser Gln Phe Leu Ala Ile Val Ala Ala Phe Cys Thr Phe
115 120 125

Leu Gly Asp Glu Lys Gln Arg Ala Tyr Ile Ala Gly Trp Thr Arg Asp
130 135 140

Gln Ser Ser Glu Val Tyr Glu Ala Val Lys Thr Gly Ile Ser Ser Ser
145 150 155 160

Glu Leu Leu Glu Gly Lys Trp Lys Glu Ala Tyr Ser Thr Ile Glu Ile
165 170 175

Phe Lys Asn Gly Ser Val Val Val Pro Leu Ser Lys Glu Ala Arg Lys
180 185 190

Thr Gly Asp Gly Lys Asn Pro Ser Leu Gly Ile Val Asp Glu Tyr His
195 200 205

Ala His Glu Thr Asp Glu Ile Tyr Asp Val Leu Ser Ser Gly Met Val
210 215 220

Ala Arg Lys Glu Pro Leu Met Phe Ile Ile Thr Thr Ala Gly Phe Asp
225 230 235 240

Leu Ser Arg Pro Cys Tyr Arg Glu Tyr Glu Tyr Val Ser Asp Ile Leu
245 250 255

FIG. 11 is a schematic diagram of the amino acid sequence of the protein.

Asp Pro Ser Lys Asn Val Glu Asn Asp Asp Tyr Phe Val Met Ile Cys
 260 265 270

Glu Leu Glu Lys Asn Asp Asp Ile Lys Asp Glu Ser Asn Trp Ile Lys
 275 280 285

Ala Asn Pro Ile Val Ala Thr Tyr Glu Glu Gly Leu Glu Gly Ile Arg
 290 295 300

Ser Asp Leu Lys Val Ala Leu Asp Arg Pro Glu Lys Met Arg Ala Phe
 305 310 315 320

Leu Thr Lys Asn Met Asn Ile Trp Val Asp Lys Lys Asp Asn Gly Tyr
 325 330 335

Met Asp Met Ser Lys Trp Gln Lys Cys Glu Val Asp Thr Phe Asp Phe
 340 345 350

Ser Gly Ala Thr Leu Trp Ile Gly Gly Asp Leu Ser Met Thr Thr Asp
 355 360 365

Leu Thr Ser Val Gly Trp Val Gly Met Asp Asp Glu Gly Asp Phe Ile
 370 375 380

Val Gly Gln His Ser Phe Met Pro Glu Ala Arg Leu Lys Glu Lys Met
 385 390 395 400

Ala Ile Asp Lys Val Arg Tyr Asp Leu Trp Ala Glu Gln Gly Tyr Leu
 405 410 415

Thr Leu Thr Pro Gly Glu Met Val Asp Tyr Thr Ile Val Glu Ser Trp
 420 425 430

Ile Glu Asn Phe Ser Lys Asp Lys Glu Ile Gln Glu Phe Asp Tyr Asp
 435 440 445

Lys Trp Asn Ala Leu His Leu Ala Gln Asn Leu Glu Asn Lys Gly Phe
 450 455 460

Val Cys Val Glu Ile Pro Gln Arg Ile Ala Asn Leu Ser Ile Pro Thr
 465 470 475 480

Lys Asn Phe Arg Glu Lys Val Tyr Glu Lys Lys Val Lys His Asn Gly

FIG. 1 is a schematic diagram of the amino acid sequence of the protein of the present invention.

485

490

495

Asp Pro Val Leu Phe Trp Ala Leu Asn Asn Ala Val Val Lys Met Asp
500 505 510

Asp Gln Glu Asn Ile Met Ile Ser Lys Lys Ile Ser Lys Asn Arg Ile
515 520 525

Asp Pro Ala Ala Ala Val Leu Asn Ala Phe Ser Arg Ala Met Tyr Gly
530 535 540

Ala Ser Val Arg Phe Asp Val Ser Glu Phe Ala Asn Lys Asp Phe Leu
545 550 555 560

Gly Lys Leu Trp Asn
565

<210> 7
<211> 432
<212> PRT
<213> Bacillus anthracis

<400> 7

Val Lys Ile Val Asp Ser Val Lys Lys Phe Phe Asn Phe Glu Lys Arg
1 5 10 15

Gln Thr Ser Gln Val Ile Glu Leu Asn Lys Asp Asp Glu Lys Leu Leu
20 25 30

Glu Trp Leu Gly Ile Ser Pro Ser Thr Ile Ser Val Lys Gly Lys Asn
35 40 45

Ala Leu Lys Val Ala Thr Val Phe Ala Cys Ile Lys Ile Leu Ser Glu
50 55 60

Ser Val Ser Lys Leu Pro Leu Lys Ile Tyr Gln Glu Asp Glu Tyr Gly
65 70 75 80

Ile Gln Arg Gly Thr Lys His Tyr Leu Asn Asn Leu Leu Arg Leu Arg
85 90 95

Pro Asn Pro Tyr Met Ser Ser Met Asn Phe Phe Gly Ser Leu Glu Ala
100 105 110

Gln Lys Asn Leu Tyr Gly Asn Ser Tyr Ala Asn Ile Glu Phe Asp Arg
 115 120 125

Lys Gly Lys Val Gln Ala Leu Trp Pro Ile Asp Ala Ser Lys Val Thr
 130 135 140

Val Tyr Ile Asp Asp Val Gly Leu Leu Asn Ser Lys Thr Lys Met Trp
 145 150 155 160

Tyr Val Val Asn Thr Gly Gly Gln Gln Arg Val Leu Lys Pro Glu Glu
 165 170 175

Ile Leu His Phe Lys Asn Gly Ile Thr Leu Asp Gly Leu Val Gly Val
 180 185 190

Pro Thr Met Glu Tyr Leu Lys Ser Thr Leu Glu Asn Ser Ala Ser Ala
 195 200 205

Asp Lys Phe Ile Asn Asn Phe Tyr Lys Gln Gly Leu Gln Val Lys Gly
 210 215 220

Leu Val Gln Tyr Val Gly Asp Leu Asn Glu Asp Ala Lys Lys Val Phe
 225 230 235 240

Arg Glu Asn Phe Glu Ser Met Ser Ser Gly Leu Gln Asn Ser His Arg
 245 250 255

Ile Ala Leu Met Pro Val Gly Tyr Gln Phe Gln Pro Ile Ser Leu Asn
 260 265 270

Met Ser Asp Ala Gln Phe Leu Glu Asn Thr Glu Leu Thr Ile Arg Gln
 275 280 285

Ile Ala Thr Ala Phe Gly Ile Lys Met His Gln Leu Asn Asp Leu Ser
 290 295 300

Lys Ala Thr Leu Asn Asn Ile Glu Gln Gln Gln Gln Gln Phe Tyr Thr
 305 310 315 320

Asp Thr Leu Gln Ala Thr Leu Thr Met Tyr Glu Gln Glu Met Thr Tyr
 325 330 335

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Lys Leu Phe Leu Asp Ser Glu Leu Asp Lys Gly Phe Tyr Ser Lys Phe
 340 345 350

Asn Val Asp Ala Ile Leu Arg Ala Asp Ile Lys Thr Arg Tyr Glu Ala
 355 360 365

Tyr Arg Thr Gly Ile Gln Gly Gly Phe Leu Lys Pro Asn Glu Ala Arg
 370 375 380

Ser Lys Glu Asp Leu Pro Pro Glu Ala Gly Gly Asp Arg Leu Leu Val
 385 390 395 400

Asn Gly Asn Met Leu Pro Ile Asp Met Ala Gly Gln Ala Tyr Leu Lys
 405 410 415

Gly Gly Asp Thr Asn Gly Glu Val Ser Lys Glu Gly Asn Glu Gly Asn
 420 425 430

<210> 8

<211> 432

<212> PRT

<213> Bacillus anthracis

<400> 8

Val Lys Ile Val Asp Ser Val Lys Lys Phe Phe Asn Phe Glu Lys Arg
 1 5 10 15

Gln Thr Ser Gln Val Ile Glu Leu Asn Lys Asp Asp Glu Lys Leu Leu
 20 25 30

Glu Trp Leu Gly Ile Ser Pro Ser Thr Ile Ser Val Lys Gly Lys Asn
 35 40 45

Ala Leu Lys Val Ala Thr Val Phe Ala Cys Ile Lys Ile Leu Ser Glu
 50 55 60

Ser Val Ser Lys Leu Pro Leu Lys Ile Tyr Gln Glu Asp Glu Tyr Gly
 65 70 75 80

Ile Gln Arg Gly Thr Lys His Tyr Leu Asn Asn Leu Leu Arg Leu Arg
 85 90 95

Pro Asn Pro Tyr Met Ser Ser Met Asn Phe Phe Gly Ser Leu Glu Ala
 100 105 110

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Gln Lys Asn Leu Tyr Gly Asn Ser Tyr Ala Asn Ile Glu Phe Asp Arg
 115 120 125

Lys Gly Lys Val Gln Ala Leu Trp Pro Ile Asp Ala Ser Lys Val Thr
 130 135 140

Val Tyr Ile Asp Asp Val Gly Leu Leu Asn Ser Lys Thr Lys Met Trp
 145 150 155 160

Tyr Val Val Asn Thr Gly Gly Gln Gln Arg Val Leu Lys Pro Glu Glu
 165 170 175

Ile Leu His Phe Lys Asn Gly Ile Thr Leu Asp Gly Leu Val Gly Val
 180 185 190

Pro Thr Met Glu Tyr Leu Lys Ser Thr Leu Glu Asn Ser Ala Ser Ala
 195 200 205

Asp Lys Phe Ile Asn Asn Phe Tyr Lys Gln Gly Leu Gln Val Lys Gly
 210 215 220

Leu Val Gln Tyr Val Gly Asp Leu Asn Glu Asp Ala Lys Lys Val Phe
 225 230 235 240

Arg Glu Asn Phe Glu Ser Met Ser Ser Gly Leu Gln Asn Ser His Arg
 245 250 255

Ile Ala Leu Met Pro Val Gly Tyr Gln Phe Gln Pro Ile Ser Leu Asn
 260 265 270

Met Ser Asp Ala Gln Phe Leu Glu Asn Thr Glu Leu Thr Ile Arg Gln
 275 280 285

Ile Ala Thr Ala Phe Gly Ile Lys Met His Gln Leu Asn Asp Leu Ser
 290 295 300

Lys Ala Thr Leu Asn Asn Ile Glu Gln Gln Gln Gln Gln Phe Tyr Thr
 305 310 315 320

Asp Thr Leu Gln Ala Thr Leu Thr Met Tyr Glu Gln Glu Met Thr Tyr
 325 330 335

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Lys Leu Phe Leu Asp Ser Glu Leu Asp Lys Gly Phe Tyr Ser Lys Phe
 340 345 350

Asn Val Asp Ala Ile Leu Arg Ala Asp Ile Lys Thr Arg Tyr Glu Ala
 355 360 365

Tyr Arg Thr Gly Ile Gln Gly Gly Phe Leu Lys Pro Asn Glu Ala Arg
 370 375 380

Ser Lys Glu Asp Leu Pro Pro Glu Ala Gly Gly Asp Arg Leu Leu Val
 385 390 395 400

Asn Gly Asn Met Leu Pro Ile Asp Met Ala Gly Gln Ala Tyr Leu Lys
 405 410 415

Gly Gly Asp Thr Asn Gly Glu Val Ser Lys Glu Gly Asn Glu Gly Asn
 420 425 430

<210> 9

<211> 206

<212> PRT

<213> Bacillus anthracis

<400> 9

Met Glu Lys Ser Ala Lys Lys Glu Met Lys Glu Ile Arg Ala Leu Pro
 1 5 10 15

Met Thr Ile Glu Val Arg Glu Val Asn Glu Asp Glu Gly Lys Arg Thr
 20 25 30

Ile Ser Gly Ser Ile Lys Tyr Asn Asn Glu Ser Ala Glu Met Arg Asp
 35 40 45

Trp Trp Gly Asp Thr Phe Val Glu Glu Ile Ala Glu Gly Ala Phe Asp
 50 55 60

Glu Ser Leu Lys Val Arg Asp Val Val Gly Leu Trp Ser His Asp Thr
 65 70 75 80

Ser Gln Val Leu Gly Asn Thr Lys Ser Lys Thr Leu Arg Ile Glu Asn
 85 90 95

Asp Lys Lys Glu Leu Arg Phe Glu Leu Asp Ile Pro Asn Thr Thr Val

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100

105

110

Gly Asn Asp Ala Trp Glu Leu Ile Lys Arg Gly Asp Val Asp Gly Val
 115 120 125

Ser Phe Gly Met Lys Val Thr Lys Asp Lys Trp Ser Ser Glu Glu Arg
 130 135 140

Glu Asn Gly Lys Leu Tyr Lys Arg Ser Ile Leu Asn Ala Glu Leu Tyr
 145 150 155 160

Glu Ile Ser Pro Val Ala Phe Pro Ala Tyr Pro Thr Asn Glu Val Ser
 165 170 175

Val Arg Ser Leu Asp Asp Phe Lys Ala Gly Glu Lys Arg Val Ala Asp
 180 185 190

Glu Phe Arg Lys Arg Lys Leu Gln Ile Glu Leu Glu Leu Ile
 195 200 205

<210> 10
 <211> 206
 <212> PRT
 <213> Bacillus anthracis

<400> 10

Met Glu Lys Ser Ala Lys Lys Glu Met Lys Glu Ile Arg Ala Leu Pro
 1 5 10 15

Met Thr Ile Glu Val Arg Glu Val Asn Glu Asp Glu Gly Lys Arg Thr
 20 25 30

Ile Ser Gly Ser Ile Lys Tyr Asn Asn Glu Ser Ala Glu Met Arg Asp
 35 40 45

Trp Trp Gly Asp Thr Phe Val Glu Glu Ile Ala Glu Gly Ala Phe Asp
 50 55 60

Glu Ser Leu Lys Val Arg Asp Val Val Gly Leu Trp Ser His Asp Thr
 65 70 75 80

Ser Gln Val Leu Gly Asn Thr Lys Ser Lys Thr Leu Arg Ile Glu Asn
 85 90 95

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Asp Lys Lys Glu Leu Arg Phe Glu Leu Asp Ile Pro Asn Thr Thr Val
100 105 110

Gly Asn Asp Ala Trp Glu Leu Ile Lys Arg Gly Asp Val Asp Gly Val
115 120 125

Ser Phe Gly Met Lys Val Thr Lys Asp Lys Trp Ser Ser Glu Glu Arg
130 135 140

Glu Asn Gly Lys Leu Tyr Lys Arg Ser Ile Leu Asn Ala Glu Leu Tyr
145 150 155 160

Glu Ile Ser Pro Val Ala Phe Pro Ala Tyr Pro Thr Asn Glu Val Ser
165 170 175

Val Arg Ser Leu Asp Asp Phe Lys Ala Gly Glu Lys Arg Val Ala Asp
180 185 190

Glu Phe Arg Lys Arg Lys Leu Gln Ile Glu Leu Glu Leu Ile
195 200 205

<210> 11

<211> 392

<212> PRT

<213> Bacillus anthracis

<400> 11

Met Ser Lys Glu Leu Arg Glu Leu Leu Ala Lys Leu Glu Gly Lys Lys
1 5 10 15

Glu Glu Val Arg Ser Leu Met Gly Glu Asp Lys Val Ala Glu Ala Glu
20 25 30

Gln Met Met Glu Glu Val Arg Ser Leu Gln Lys Lys Ile Asp Leu Gln
35 40 45

Arg Ser Leu Asp Glu Ala Glu Thr Glu Glu Arg Asn Asn Gly Arg Glu
50 55 60

Val Glu Thr Arg Asn Val Asp Gly Glu Met Glu Tyr Arg Asp Val Phe
65 70 75 80

Met Lys Ala Leu Arg Asn Lys Pro Leu Asn Ala Glu Glu Arg Glu Phe

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85

90

95

Leu Glu Asp Asp Leu Glu Gln Arg Ala Met Ser Gly Leu Thr Gly Glu
 100 105 110

Asp Gly Gly Leu Val Ile Pro Gln Asp Ile Gln Thr Gln Ile Asn Glu
 115 120 125

Leu Ala Arg Ser Phe Asp Ala Leu Glu Gln Tyr Val Thr Val Glu Pro
 130 135 140

Val Arg Thr Arg Ser Gly Ser Arg Val Leu Glu Lys Asn Ser Asp Met
 145 150 155 160

Ile Pro Phe Ala Glu Ile Thr Glu Met Gly Glu Ile Pro Glu Thr Asp
 165 170 175

Asn Pro Lys Phe Ser Asn Val Gln Tyr Ala Val Lys Asp Arg Ala Gly
 180 185 190

Ile Leu Pro Leu Ser Arg Ser Leu Leu Gln Asp Ser Asp Gln Asn Ile
 195 200 205

Leu Lys Tyr Val Thr Lys Trp Leu Gly Lys Lys Ser Lys Val Thr Arg
 210 215 220

Asn Val Leu Ile Leu Gly Val Ile Glu Lys Leu Thr Lys Gln Ala Ile
 225 230 235 240

Lys Ser Leu Asp Asp Ile Lys Asp Val Leu Asn Val Lys Leu Asp Pro
 245 250 255

Ala Ile Ser Pro Asn Ala Ile Leu Leu Thr Asn Gln Asp Gly Phe Asn
 260 265 270

Tyr Leu Asp Lys Leu Lys Asp Lys Asp Gly Lys Tyr Ile Leu Gln Ser
 275 280 285

Asp Pro Thr Gln Lys Asn Lys Lys Leu Phe Ala Gly Thr Asn Pro Val
 290 295 300

Val Val Val Ser Asn Arg Phe Leu Lys Ser Lys Gly Thr Thr Ala Lys
 305 310 315 320

Lys Ala Pro Leu Ile Ile Gly Asp Leu Lys Glu Ala Ile Val Leu Phe
325 330 335

Lys Arg Glu Asp Met Glu Leu Ala Ser Thr Asp Val Gly Gly Lys Ala
340 345 350

Phe Thr Arg Asn Thr Leu Asp Leu Arg Ala Ile Gln Arg Asp Asp Val
355 360 365

Gln Met Trp Asp Asn Glu Ala Ala Val Tyr Gly Glu Ile Asp Leu Ser
370 375 380

Ala Pro Val Glu Gln Pro Gln Gly
385 390

<210> 12
<211> 392
<212> PRT
<213> Bacillus anthracis

<400> 12

Met Ser Lys Glu Leu Arg Glu Leu Leu Ala Lys Leu Glu Gly Lys Lys
1 5 10 15

Glu Glu Val Arg Ser Leu Met Gly Glu Asp Lys Val Ala Glu Ala Glu
20 25 30

Gln Met Met Glu Glu Val Arg Ser Leu Gln Lys Lys Ile Asp Leu Gln
35 40 45

Arg Ser Leu Asp Glu Ala Glu Thr Glu Glu Arg Asn Asn Gly Arg Glu
50 55 60

Val Glu Thr Arg Asn Val Asp Gly Glu Met Glu Tyr Arg Asp Val Phe
65 70 75 80

Met Lys Ala Leu Arg Asn Lys Pro Leu Asn Ala Glu Glu Arg Glu Phe
85 90 95

Leu Glu Asp Asp Leu Glu Gln Arg Ala Met Ser Gly Leu Thr Gly Glu
100 105 110

Sequence of amino acids of the protein of the present invention

Asp Gly Gly Leu Val Ile Pro Gln Asp Ile Gln Thr Gln Ile Asn Glu
 115 120 125

Leu Ala Arg Ser Phe Asp Ala Leu Glu Gln Tyr Val Thr Val Glu Pro
 130 135 140

Val Arg Thr Arg Ser Gly Ser Arg Val Leu Glu Lys Asn Ser Asp Met
 145 150 155 160

Ile Pro Phe Ala Glu Ile Thr Glu Met Gly Glu Ile Pro Glu Thr Asp
 165 170 175

Asn Pro Lys Phe Ser Asn Val Gln Tyr Ala Val Lys Asp Arg Ala Gly
 180 185 190

Ile Leu Pro Leu Ser Arg Ser Leu Leu Gln Asp Ser Asp Gln Asn Ile
 195 200 205

Leu Lys Tyr Val Thr Lys Trp Leu Gly Lys Lys Ser Lys Val Thr Arg
 210 215 220

Asn Val Leu Ile Leu Gly Val Ile Glu Lys Leu Thr Lys Gln Ala Ile
 225 230 235 240

Lys Ser Leu Asp Asp Ile Lys Asp Val Leu Asn Val Lys Leu Asp Pro
 245 250 255

Ala Ile Ser Pro Asn Ala Ile Leu Leu Thr Asn Gln Asp Gly Phe Asn
 260 265 270

Tyr Leu Asp Lys Leu Lys Asp Lys Asp Gly Lys Tyr Ile Leu Gln Ser
 275 280 285

Asp Pro Thr Gln Lys Asn Lys Lys Leu Phe Ala Gly Thr Asn Pro Val
 290 295 300

Val Val Val Ser Asn Arg Phe Leu Lys Ser Lys Gly Thr Thr Ala Lys
 305 310 315 320

Lys Ala Pro Leu Ile Ile Gly Asp Leu Lys Glu Ala Ile Val Leu Phe
 325 330 335

Lys Arg Glu Asp Met Glu Leu Ala Ser Thr Asp Val Gly Gly Lys Ala

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340

345

350

Phe Thr Arg Asn Thr Leu Asp Leu Arg Ala Ile Gln Arg Asp Asp Val
 355 360 365

Gln Met Trp Asp Asn Glu Ala Ala Val Tyr Gly Glu Ile Asp Leu Ser
 370 375 380

Ala Pro Val Glu Gln Pro Gln Gly
 385 390

<210> 13
 <211> 96
 <212> PRT
 <213> Bacillus anthracis

<400> 13

Met Leu Val Thr Leu Glu Glu Ala Lys Glu Trp Ile Arg Val Asp Gly
 1 5 10 15

Asp Asp Asp Pro Thr Ile Thr Met Leu Ile Lys Ala Ala Glu Leu Tyr
 20 25 30

Ile Tyr Lys Ala Thr Gly Lys Thr Phe Thr Gln Thr Asn Glu Asp Ala
 35 40 45

Lys Leu Leu Cys Leu Phe Leu Val Ala Asp Trp Tyr Gly Asn Arg Leu
 50 55 60

Leu Val Gly Glu Lys Ala Ser Glu Lys Ile Arg Thr Ile Val Gln Ser
 65 70 75 80

Met Ile Leu Gln Leu Gln Tyr Ala Ser Glu Pro Gln Glu Glu Arg Lys
 85 90 95

<210> 14
 <211> 96
 <212> PRT
 <213> Bacillus anthracis

<400> 14

Met Leu Val Thr Leu Glu Glu Ala Lys Glu Trp Ile Arg Val Asp Gly
 1 5 10 15

It is to be understood that the present disclosure is not limited to the specific details disclosed herein.

Asp Asp Asp Pro Thr Ile Thr Met Leu Ile Lys Ala Ala Glu Leu Tyr
20 25 30

Ile Tyr Lys Ala Thr Gly Lys Thr Phe Thr Gln Thr Asn Glu Asp Ala
35 40 45

Lys Leu Leu Cys Leu Phe Leu Val Ala Asp Trp Tyr Gly Asn Arg Leu
50 55 60

Leu Val Gly Glu Lys Ala Ser Glu Lys Ile Arg Thr Ile Val Gln Ser
65 70 75 80

Met Ile Leu Gln Leu Gln Tyr Ala Ser Glu Pro Gln Glu Glu Arg Lys
85 90 95

<210> 15
<211> 107
<212> PRT
<213> Bacillus anthracis

<400> 15

Met Asn Pro Ala Lys Leu Asp Lys Arg Leu Thr Phe Gln Val Lys Asp
1 5 10 15

Glu Asn Ala Lys Gly Pro Asp Gly Asp Pro Ile Asp Gly Tyr Lys Asp
20 25 30

Ala Phe Thr Val Trp Gly Ser Phe Val Tyr Leu Lys Gly Arg Lys Tyr
35 40 45

Phe Glu Ala Ala Ala Ala Asn Ser Glu Val Gln Gly Glu Thr Glu Ile
50 55 60

Arg Asn Arg Asp Asp Val Ser Ala Asp Met Lys Ile Lys Tyr Lys Asn
65 70 75 80

Val Ile Tyr Asp Ile Val Ser Val Ile Pro Thr Gln Asp His Thr Leu
85 90 95

Leu Ile Met Trp Lys Arg Gly Glu Met Asn Gly
100 105

<210> 16
<211> 107

if the first amino acid is a proline, the first amino acid is a proline

<212> PRT

<213> Bacillus anthracis

<400> 16

Met Asn Pro Ala Lys Leu Asp Lys Arg Leu Thr Phe Gln Val Lys Asp
1 5 10 15

Glu Asn Ala Lys Gly Pro Asp Gly Asp Pro Ile Asp Gly Tyr Lys Asp
20 25 30

Ala Phe Thr Val Trp Gly Ser Phe Val Tyr Leu Lys Gly Arg Lys Tyr
35 40 45

Phe Glu Ala Ala Ala Ala Asn Ser Glu Val Gln Gly Glu Thr Glu Ile
50 55 60

Arg Asn Arg Asp Asp Val Ser Ala Asp Met Lys Ile Lys Tyr Lys Asn
65 70 75 80

Val Ile Tyr Asp Ile Val Ser Val Ile Pro Thr Gln Asp His Thr Leu
85 90 95

Leu Ile Met Trp Lys Arg Gly Glu Met Asn Gly
100 105

<210> 17

<211> 105

<212> PRT

<213> Bacillus anthracis

<400> 17

Met Lys Leu Thr Leu Met Ile Asn Lys Glu Lys Gln Thr Phe Asn Met
1 5 10 15

Pro Glu Phe Ile Pro Ala Arg Leu Ile Arg Gln Ala Pro Glu Leu Ala
20 25 30

Glu Ile Pro Asn Asn Pro Gly Pro Glu Asp Met Asp Lys Met Val Gln
35 40 45

Phe Val Val Lys Val Tyr Asp Gly Gln Phe Thr Leu Asp Gln Tyr Trp
50 55 60

Asp Gly Val Asp Ala Arg Lys Phe Leu Ser Thr Thr Ser Asp Val Ile

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65

70

75

80

Asn Ala Ile Ile Asn Glu Thr Val Glu Ala Ala Gly Gly Ser Thr Glu
 85 90 95

Ser Gly Glu Glu Glu Asn Pro Asn Ala
 100 105

<210> 18
 <211> 105
 <212> PRT
 <213> Bacillus anthracis

<400> 18

Met Lys Leu Thr Leu Met Ile Asn Lys Glu Lys Gln Thr Phe Asn Met
 1 5 10 15

Pro Glu Phe Ile Pro Ala Arg Leu Ile Arg Gln Ala Pro Glu Leu Ala
 20 25 30

Glu Ile Pro Asn Asn Pro Gly Pro Glu Asp Met Asp Lys Met Val Gln
 35 40 45

Phe Val Val Lys Val Tyr Asp Gly Gln Phe Thr Leu Asp Gln Tyr Trp
 50 55 60

Asp Gly Val Asp Ala Arg Lys Phe Leu Ser Thr Thr Ser Asp Val Ile
 65 70 75 80

Asn Ala Ile Ile Asn Glu Thr Val Glu Ala Ala Gly Gly Ser Thr Glu
 85 90 95

Ser Gly Glu Glu Glu Asn Pro Asn Ala
 100 105

<210> 19
 <211> 119
 <212> PRT
 <213> Bacillus anthracis

<400> 19

Val Ile Asn Leu Arg Pro Asp Ile Leu Gln Ala Leu Glu Asn Asp Gln
 1 5 10 15

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Glu Leu Val Ser Leu Leu Gly Gly Lys Arg Ile Tyr Tyr Arg Lys Ala
 20 25 30

Lys Lys Ala Glu Glu Phe Pro Arg Ile Thr Tyr Phe Glu Leu Asp Asn
 35 40 45

Arg Pro Asp Gly Phe Ala Asp Asn Gln Glu Ile Glu Ser Glu Ile Leu
 50 55 60

Phe Gln Val Asp Val Trp Ala Lys Ser Ser Thr Thr Ala Ile His Gln
 65 70 75 80

Lys Val Asn Glu Ile Met Lys Arg Ile Gly Phe Ser Arg Tyr Ala Val
 85 90 95

Ala Asp Leu Tyr Glu Glu Asp Thr Gln Ile Phe His Tyr Ala Met Arg
 100 105 110

Phe Ala Lys Gly Val Glu Leu
 115

<210> 20
 <211> 119
 <212> PRT
 <213> Bacillus anthracis

<400> 20

Val Ile Asn Leu Arg Pro Asp Ile Leu Gln Ala Leu Glu Asn Asp Gln
 1 5 10 15

Glu Leu Val Ser Leu Leu Gly Gly Lys Arg Ile Tyr Tyr Arg Lys Ala
 20 25 30

Lys Lys Ala Glu Glu Phe Pro Arg Ile Thr Tyr Phe Glu Leu Asp Asn
 35 40 45

Arg Pro Asp Gly Phe Ala Asp Asn Gln Glu Ile Glu Ser Glu Ile Leu
 50 55 60

Phe Gln Val Asp Val Trp Ala Lys Ser Ser Thr Thr Ala Ile His Gln
 65 70 75 80

Lys Val Asn Glu Ile Met Lys Arg Ile Gly Phe Ser Arg Tyr Ala Val
 85 90 95

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Ala Asp Leu Tyr Glu Glu Asp Thr Gln Ile Phe His Tyr Ala Met Arg
 100 105 110

Phe Ala Lys Gly Val Glu Leu
 115

<210> 21
 <211> 202
 <212> PRT
 <213> Bacillus anthracis

<400> 21

Met Ala Gly Glu Val Val Arg Ile Ser Ser Thr Val Gly Val Asp Asn
 1 5 10 15

Leu Val Tyr Ala Lys Val Leu Gln Asp Asp Ser Ser Ala Ile Lys Tyr
 20 25 30

Thr Asp Val Lys Lys Met Glu Gly Ala Val Lys Val Lys Leu Thr Lys
 35 40 45

Lys Val Ala Ser Glu Val Met Trp Ser Asp Asn Arg Lys Ser Glu Ile
 50 55 60

Ala Glu Ser Asp Gly Glu Thr Glu Val Glu Ile Glu Val Arg Gly Leu
 65 70 75 80

Ser Leu Ser Thr Lys Ala Asp Ile Glu Gly Phe Pro Glu Val Lys Asp
 85 90 95

Gly Val Leu Asp Glu Lys Arg Glu Gly Glu Lys Pro Tyr Leu Ala Ile
 100 105 110

Gly Phe Arg Phe Leu Lys Ala Asn Asp Lys Tyr Arg Tyr Val Trp Leu
 115 120 125

Leu Lys Gly Lys Leu Ser Gln Glu Glu Glu Glu Ala Glu Thr Lys Lys
 130 135 140

Asp Lys Pro Asn Phe Gln Thr Thr Lys Leu Lys Gly Ser Phe Ile Glu
 145 150 155 160

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Arg Asp Phe Asp Asp Arg Thr Lys Phe Thr Ala Asp Glu Asp Glu Pro
 165 170 175

Thr Phe Thr Lys Leu Val Gly Asp Asn Trp Phe Asn Lys Val Tyr Glu
 180 185 190

Lys Pro Val Thr Gln Pro Pro Ala Gly Lys
 195 200

<210> 22

<211> 202

<212> PRT

<213> Bacillus anthracis

<400> 22

Met Ala Gly Glu Val Val Arg Ile Ser Ser Thr Val Gly Val Asp Asn
 1 5 10 15

Leu Val Tyr Ala Lys Val Leu Gln Asp Asp Ser Ser Ala Ile Lys Tyr
 20 25 30

Thr Asp Val Lys Lys Met Glu Gly Ala Val Lys Val Lys Leu Thr Lys
 35 40 45

Lys Val Ala Ser Glu Val Met Trp Ser Asp Asn Arg Lys Ser Glu Ile
 50 55 60

Ala Glu Ser Asp Gly Glu Thr Glu Val Glu Ile Glu Val Arg Gly Leu
 65 70 75 80

Ser Leu Ser Thr Lys Ala Asp Ile Glu Gly Phe Pro Glu Val Lys Asp
 85 90 95

Gly Val Leu Asp Glu Lys Arg Glu Gly Glu Lys Pro Tyr Leu Ala Ile
 100 105 110

Gly Phe Arg Phe Leu Lys Ala Asn Asp Lys Tyr Arg Tyr Val Trp Leu
 115 120 125

Leu Lys Gly Lys Leu Ser Gln Glu Glu Glu Glu Ala Glu Thr Lys Lys
 130 135 140

Asp Lys Pro Asn Phe Gln Thr Thr Lys Leu Lys Gly Ser Phe Ile Glu
 145 150 155 160

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Arg Asp Phe Asp Asp Arg Thr Lys Phe Thr Ala Asp Glu Asp Glu Pro
 165 170 175

Thr Phe Thr Lys Leu Val Gly Asp Asn Trp Phe Asn Lys Val Tyr Glu
 180 185 190

Lys Pro Val Thr Gln Pro Pro Ala Gly Lys
 195 200

<210> 23
 <211> 105
 <212> PRT
 <213> Bacillus anthracis

<400> 23

Met Lys Leu Thr Leu Met Ile Asn Lys Glu Lys Gln Thr Phe Asn Met
 1 5 10 15

Pro Glu Phe Ile Pro Ala Arg Leu Ile Arg Gln Ala Pro Glu Leu Ala
 20 25 30

Glu Ile Pro Asn Asn Pro Gly Pro Glu Asp Met Asp Lys Met Val Gln
 35 40 45

Phe Val Val Lys Val Tyr Asp Gly Gln Phe Thr Leu Asp Gln Tyr Trp
 50 55 60

Asp Gly Val Asp Ala Arg Lys Phe Leu Ser Thr Thr Ser Asp Val Ile
 65 70 75 80

Asn Ala Ile Ile Asn Glu Thr Val Glu Ala Ala Gly Gly Ser Thr Glu
 85 90 95

Ser Gly Glu Glu Glu Asn Pro Asn Ala
 100 105

<210> 24
 <211> 105
 <212> PRT
 <213> Bacillus anthracis

<400> 24

Met Lys Leu Thr Leu Met Ile Asn Lys Glu Lys Gln Thr Phe Asn Met

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1 5 10 15

Pro Glu Phe Ile Pro Ala Arg Leu Ile Arg Gln Ala Pro Glu Leu Ala
20 25 30

Glu Ile Pro Asn Asn Pro Gly Pro Glu Asp Met Asp Lys Met Val Gln
35 40 45

Phe Val Val Lys Val Tyr Asp Gly Gln Phe Thr Leu Asp Gln Tyr Trp
50 55 60

Asp Gly Val Asp Ala Arg Lys Phe Leu Ser Thr Thr Ser Asp Val Ile
65 70 75 80

Asn Ala Ile Ile Asn Glu Thr Val Glu Ala Ala Gly Gly Ser Thr Glu
85 90 95

Ser Gly Glu Glu Glu Asn Pro Asn Ala
100 105

<210> 25
 <211> 58
 <212> PRT
 <213> Bacillus anthracis

<400> 25

Met Asp Glu Leu Tyr Leu Ser Leu Leu Arg Gln Gly Tyr Lys His His
1 5 10 15

His Ile Asp Asn Glu Met Asp Ile Trp His Tyr Leu Arg Leu Asn Arg
20 25 30

Lys Met His Glu Asn Gly Asn Glu Asn Tyr Glu Gly Ser Asn Ser Asn
35 40 45

Glu Ile Glu Val Pro Ala Glu Asn Ile Ile
50 55

<210> 26
 <211> 58
 <212> PRT
 <213> Bacillus anthracis

<400> 26

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Met Asp Glu Leu Tyr Leu Ser Leu Leu Arg Gln Gly Tyr Lys His His
 1 5 10 15

His Ile Asp Asn Glu Met Asp Ile Trp His Tyr Leu Arg Leu Asn Arg
 20 25 30

Lys Met His Glu Asn Gly Asn Glu Asn Tyr Glu Gly Ser Asn Ser Asn
 35 40 45

Glu Ile Glu Val Pro Ala Glu Asn Ile Ile
 50 55

<210> 27
 <211> 1283
 <212> PRT
 <213> Bacillus anthracis

<400> 27

Met Ala Asn Glu Ile Asn Asn Leu Val Val Arg Leu Ser Leu Asp Asn
 1 5 10 15

Val Asn Phe Arg Gln Gly Ile Ser Asn Ser Gly Arg Ala Val Arg Thr
 20 25 30

Leu Gln Asn Glu Leu Lys Ser Val Ser Thr Gly Met Gly Gly Phe Ala
 35 40 45

Asn Ala Ser Gln Gln Thr Gln Ala Lys Met Asn Thr Leu Ser Arg Leu
 50 55 60

Ile Asp Ala Gln Lys Glu Lys Val Lys Ala Leu Arg Gln Ala Tyr Asp
 65 70 75 80

Gln Asn Lys Ala Lys Leu Gly Glu Asn Asp Ala Ala Thr Gln Arg Tyr
 85 90 95

Ala Ser Gln Val Asn Lys Ala Val Ala Asp Leu Asn Arg Phe Glu Asn
 100 105 110

Glu Leu Lys Gln Val Asn Arg Gln Ala Glu Gln Lys Gly Met Asp Lys
 115 120 125

Leu Asn Asn Ser Leu Lys Ser Leu Gln Ala Glu Phe Gln Ser Ile Thr
 130 135 140

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Thr Gly Met Gly Gly Phe Ser Asn Ala Thr Glu Gln Thr Arg Ala Lys
 145 150 155 160

Val Asp Val Leu Ser Arg Met Val Asp Lys Gln Lys Glu Lys Ile Arg
 165 170 175

Glu Leu Gln Gln Ala Tyr Asn Arg Ala Lys Thr Glu Glu Gly Glu Ala
 180 185 190

Ser Gln Ser Ala Gln Arg Tyr Ala Glu Gln Ile His Arg Ala Thr Ala
 195 200 205

Glu Leu Asn Arg Phe Glu Thr Gly Leu Gln Gln Ser Asn Arg Glu Leu
 210 215 220

Glu Gln Gln Gly Asn Arg Leu Leu Asn Phe Gly Asn Arg Met Glu Thr
 225 230 235 240

Leu Gly Asn His Leu Gln Asn Ala Gly Met Gln Ile Gly Met Val Phe
 245 250 255

Gly Gly Met Thr Tyr Ala Ile Gly Arg Gly Leu Lys Ser Ala Ile Thr
 260 265 270

Glu Ser Met Asn Phe Glu Gln Gln Met Ala Asn Val Lys Ala Val Ser
 275 280 285

Gly Ser Thr Gly Ala Glu Met Lys Lys Leu Ser Glu Leu Ala Val Asn
 290 295 300

Met Gly Glu Thr Thr Lys Tyr Ser Ser Val Gln Ala Gly Gln Gly Ile
 305 310 315 320

Glu Glu Leu Ile Lys Ala Gly Val Ser Leu Gln Asp Ile Ile Asn Gly
 325 330 335

Gly Leu Ala Gly Ala Leu Asn Leu Ala Thr Ala Gly Glu Leu Glu Leu
 340 345 350

Gly Glu Ala Ala Glu Ile Ala Ser Thr Ala Leu Asn Ala Phe Lys Ala
 355 360 365

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Asp His Leu Ser Val Ala Asp Ala Ala Asn Ile Leu Ser Gly Ala Ala
 370 375 380

Asn Ala Ser Ala Thr Asp Val Arg Glu Leu Lys Tyr Gly Leu Ser Ala
 385 390 395 400

Ser Ser Ala Val Ala Ala Gly Ala Gly Met Thr Phe Lys Asp Thr Ala
 405 410 415

Thr Thr Leu Ala Val Phe Ala Gln Asn Gly Leu Lys Gly Ser Asp Ala
 420 425 430

Gly Thr Ser Leu Lys Thr Met Leu Met Arg Leu Asn Pro Ser Thr Lys
 435 440 445

Glu Ala Tyr Asn Lys Met Arg Asp Leu Gly Leu Ile Thr Tyr Asn Ala
 450 455 460

Gln Ala Gly Phe Asp Phe Leu Val Lys Asn Gly Ile Gln Pro Ala Ser
 465 470 475 480

Arg Asn Val Gly Asp Ile Glu Val Ala Leu Glu Gln Tyr Val Met Lys
 485 490 495

Thr Glu Gly Val Thr Lys Trp Asn Asp Lys Cys Asp Thr Thr Phe Arg
 500 505 510

Glu Leu Ala Thr Ser Ser Ala Phe Leu Ser Ser Lys Phe Tyr Asp Gln
 515 520 525

Gln Gly His Ile Gln Ser Leu Glu Asn Ile Ser Gly Thr Leu His Glu
 530 535 540

Ser Met Lys Asp Leu Thr Asp Gln Gln Arg Ser Met Ala Leu Glu Thr
 545 550 555 560

Leu Phe Gly Ser Asp Ala Val Arg Gly Ala Thr Ile Leu Phe Lys Glu
 565 570 575

Gly Ala Lys Gly Val Asn Glu Met Trp Asp Ser Met Ser Lys Val Thr
 580 585 590

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Ala Ala Asp Val Ala Ala Thr Lys Ile Asp Thr Leu Lys Gly Arg Leu
 595 600 605

Thr Leu Leu Asp Ser Ala Phe Ser Thr Met Lys Lys Thr Ile Gly Asp
 610 615 620

Ala Leu Ala Pro Val Val Ser Val Phe Val Ala Gly Leu Gln Lys Leu
 625 630 635 640

Val Asp Gly Phe Asn Ser Leu Pro Gly Pro Val Gln Lys Ala Ile Ala
 645 650 655

Ile Thr Gly Gly Ile Val Leu Ala Leu Thr Ala Val Ala Thr Ala Ile
 660 665 670

Gly Val Val Leu Ala Ala Phe Gly Met Ile Ala Ser Gly Ile Gly Ser
 675 680 685

Leu Ser Leu Ala Leu Ala Ser Val Gly Gly Ile Ala Gly Ile Ala Ala
 690 695 700

Gly Ala Val Gly Phe Leu Gly Ser Ala Leu Ala Val Leu Thr Gly Pro
 705 710 715 720

Ile Gly Leu Val Ala Ala Ala Leu Ile Gly Thr Gly Val Val Ala Tyr
 725 730 735

Lys Ala Tyr Gln Lys Ala Thr Glu Asp Ser Ile Ala Ser Val Asp Arg
 740 745 750

Phe Ala Thr Asn Thr Glu Gly Lys Val Ser Ser Ser Thr Lys Lys Val
 755 760 765

Leu Gly Glu Tyr Phe Lys Leu Ser Asp Gly Ile Arg Gln Lys Leu Thr
 770 775 780

Glu Ile Arg Leu Asn His Glu Val Ile Thr Glu Glu Gln Ser Gln Lys
 785 790 795 800

Leu Ile Gly Gln Tyr Asp Lys Leu Ala Asn Thr Ile Ile Glu Lys Thr
 805 810 815

Asn Ala Arg Gln Gln Lys Glu Ile Glu Gly Leu Lys Lys Phe Phe Ala

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820

825

830

Asp Ser Tyr Val Leu Thr Ala Glu Glu Glu Asn Lys Arg Ile Glu Gln
 835 840 845

Leu Asn Gln His Tyr Glu Gln Glu Lys Leu Lys Thr Gln Glu Lys Glu
 850 855 860

Asn Lys Ile Lys Glu Ile Leu Gln Thr Ala Ala Arg Glu Asn Arg Glu
 865 870 875 880

Leu Thr Thr Ser Glu Arg Ile Ser Leu Gln Ala Leu Gln Asp Glu Met
 885 890 895

Asp Arg Val Ala Val Glu His Met Ser Lys Asn Gln Met Glu Gln Lys
 900 905 910

Val Ile Leu Glu Asn Met Arg Val Gln Ala Ser Glu Ile Ser Ala Arg
 915 920 925

Gln Ala Ala Glu Val Val Glu Asn Ser Ala Lys Ala Arg Asp Lys Val
 930 935 940

Ile Glu Asp Ala Lys Lys Thr Arg Asp Glu Lys Ile Ala Glu Ala Ile
 945 950 955 960

Arg Gln Arg Asp Glu Asn Lys Thr Ile Thr Ala Asp Glu Ala Asn Ala
 965 970 975

Ile Ile Ala Glu Ala Lys Arg Gln Tyr Asp Ser Thr Val Ser Thr Ala
 980 985 990

Arg Asp Lys His Lys Glu Ile Val Ser Glu Ala Lys Ala Gln Ala Gly
 995 1000 1005

Glu His Ala Asn Gln Val Asp Trp Glu Thr Gly Gln Val Lys Ser
 1010 1015 1020

Lys Tyr Gln Ala Met Lys Asp Asp Val Ile Arg Lys Met Lys Glu
 1025 1030 1035

Met Trp Ser Asp Val Thr Asn Lys Tyr Glu Asp Met Lys Asn Ser
 1040 1045 1050

Ala	Ser	Asn	Lys	Val	Glu	Glu	Ile	Lys	Asn	Thr	Val	Ser	Arg	Lys
1055						1060					1065			
Phe	Glu	Glu	Gln	Lys	Lys	Ala	Val	Thr	Asp	Lys	Met	Ser	Glu	Ile
1070						1075					1080			
Lys	Ser	Ser	Ile	Glu	Asp	Lys	Trp	Asn	Thr	Val	Glu	Lys	Phe	Phe
1085						1090					1095			
Ser	Ser	Ile	Asn	Leu	Arg	Ser	Ile	Gly	Lys	Ser	Ile	Ile	Glu	Gly
1100						1105					1110			
Leu	Gly	Lys	Gly	Ile	Asp	Asp	Ala	Ser	Gly	Gly	Leu	Phe	Ser	Lys
1115						1120					1125			
Ala	Ala	Glu	Ile	Ala	Ser	Asp	Ile	Lys	Lys	Thr	Ile	Ser	Gly	Ala
1130						1135					1140			
Leu	Glu	Ile	Asn	Ser	Pro	Ser	Lys	Val	Met	Ile	Pro	Val	Gly	Ser
1145						1150					1155			
Ala	Val	Pro	Glu	Gly	Val	Gly	Val	Gly	Met	Asp	Lys	Gly	Lys	Arg
1160						1165					1170			
Phe	Val	Val	Asp	Ala	Ala	Lys	Asn	Val	Val	Gly	Thr	Val	Lys	Lys
1175						1180					1185			
Gln	Met	Gly	Asn	Met	Pro	Ser	Val	Phe	Asp	Phe	Gly	Phe	Gln	Thr
1190						1195					1200			
Asn	Gln	Tyr	Ser	Ile	Pro	Gln	Asn	Thr	Phe	Ser	Asp	Phe	Ser	Gly
1205						1210					1215			
Tyr	Met	Gln	Pro	Gln	Leu	Ser	Tyr	Asn	Asn	Pro	Ser	Met	Ala	Lys
1220						1225					1230			
Thr	Ile	Phe	Pro	Asn	Arg	Pro	Gly	Gly	Glu	Gln	Glu	Leu	Asn	Leu
1235						1240					1245			
Thr	Val	Asn	Met	Thr	Asn	Val	Leu	Asp	Gly	Lys	Glu	Leu	Ala	Asn
1250						1255					1260			

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Gly Ser Tyr Thr Tyr Thr Thr Lys Leu Gln Asn Arg Glu Gln Lys
 1265 1270 1275

Arg Arg Ala Glu Phe
 1280

<210> 28
 <211> 1283
 <212> PRT
 <213> Bacillus anthracis

<400> 28

Met Ala Asn Glu Ile Asn Asn Leu Val Val Arg Leu Ser Leu Asp Asn
 1 5 10 15

Val Asn Phe Arg Gln Gly Ile Ser Asn Ser Gly Arg Ala Val Arg Thr
 20 25 30

Leu Gln Asn Glu Leu Lys Ser Val Ser Thr Gly Met Gly Gly Phe Ala
 35 40 45

Asn Ala Ser Gln Gln Thr Gln Ala Lys Met Asn Thr Leu Ser Arg Leu
 50 55 60

Ile Asp Ala Gln Lys Glu Lys Val Lys Ala Leu Arg Gln Ala Tyr Asp
 65 70 75 80

Gln Asn Lys Ala Lys Leu Gly Glu Asn Asp Ala Ala Thr Gln Arg Tyr
 85 90 95

Ala Ser Gln Val Asn Lys Ala Val Ala Asp Leu Asn Arg Phe Glu Asn
 100 105 110

Glu Leu Lys Gln Val Asn Arg Gln Ala Glu Gln Lys Gly Met Asp Lys
 115 120 125

Leu Asn Asn Ser Leu Lys Ser Leu Gln Ala Glu Phe Gln Ser Ile Thr
 130 135 140

Thr Gly Met Gly Gly Phe Ser Asn Ala Thr Glu Gln Thr Arg Ala Lys
 145 150 155 160

Val Asp Val Leu Ser Arg Met Val Asp Lys Gln Lys Glu Lys Ile Arg

165 170 175
 Glu Leu Gln Gln Ala Tyr Asn Arg Ala Lys Thr Glu Glu Gly Glu Ala
 180 185 190
 Ser Gln Ser Ala Gln Arg Tyr Ala Glu Gln Ile His Arg Ala Thr Ala
 195 200 205
 Glu Leu Asn Arg Phe Glu Thr Gly Leu Gln Gln Ser Asn Arg Glu Leu
 210 215 220
 Glu Gln Gln Gly Asn Arg Leu Leu Asn Phe Gly Asn Arg Met Glu Thr
 225 230 235 240
 Leu Gly Asn His Leu Gln Asn Ala Gly Met Gln Ile Gly Met Val Phe
 245 250 255
 Gly Gly Met Thr Tyr Ala Ile Gly Arg Gly Leu Lys Ser Ala Ile Thr
 260 265 270
 Glu Ser Met Asn Phe Glu Gln Gln Met Ala Asn Val Lys Ala Val Ser
 275 280 285
 Gly Ser Thr Gly Ala Glu Met Lys Lys Leu Ser Glu Leu Ala Val Asn
 290 295 300
 Met Gly Glu Thr Thr Lys Tyr Ser Ser Val Gln Ala Gly Gln Gly Ile
 305 310 315 320
 Glu Glu Leu Ile Lys Ala Gly Val Ser Leu Gln Asp Ile Ile Asn Gly
 325 330 335
 Gly Leu Ala Gly Ala Leu Asn Leu Ala Thr Ala Gly Glu Leu Glu Leu
 340 345 350
 Gly Glu Ala Ala Glu Ile Ala Ser Thr Ala Leu Asn Ala Phe Lys Ala
 355 360 365
 Asp His Leu Ser Val Ala Asp Ala Ala Asn Ile Leu Ser Gly Ala Ala
 370 375 380
 Asn Ala Ser Ala Thr Asp Val Arg Glu Leu Lys Tyr Gly Leu Ser Ala
 385 390 395 400

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Ser Ser Ala Val Ala Ala Gly Ala Gly Met Thr Phe Lys Asp Thr Ala
 405 410 415

Thr Thr Leu Ala Val Phe Ala Gln Asn Gly Leu Lys Gly Ser Asp Ala
 420 425 430

Gly Thr Ser Leu Lys Thr Met Leu Met Arg Leu Asn Pro Ser Thr Lys
 435 440 445

Glu Ala Tyr Asn Lys Met Arg Asp Leu Gly Leu Ile Thr Tyr Asn Ala
 450 455 460

Gln Ala Gly Phe Asp Phe Leu Val Lys Asn Gly Ile Gln Pro Ala Ser
 465 470 475 480

Arg Asn Val Gly Asp Ile Glu Val Ala Leu Glu Gln Tyr Val Met Lys
 485 490 495

Thr Glu Gly Val Thr Lys Trp Asn Asp Lys Cys Asp Thr Thr Phe Arg
 500 505 510

Glu Leu Ala Thr Ser Ser Ala Phe Leu Ser Ser Lys Phe Tyr Asp Gln
 515 520 525

Gln Gly His Ile Gln Ser Leu Glu Asn Ile Ser Gly Thr Leu His Glu
 530 535 540

Ser Met Lys Asp Leu Thr Asp Gln Gln Arg Ser Met Ala Leu Glu Thr
 545 550 555 560

Leu Phe Gly Ser Asp Ala Val Arg Gly Ala Thr Ile Leu Phe Lys Glu
 565 570 575

Gly Ala Lys Gly Val Asn Glu Met Trp Asp Ser Met Ser Lys Val Thr
 580 585 590

Ala Ala Asp Val Ala Ala Thr Lys Ile Asp Thr Leu Lys Gly Arg Leu
 595 600 605

Thr Leu Leu Asp Ser Ala Phe Ser Thr Met Lys Lys Thr Ile Gly Asp
 610 615 620

It is to be understood that the above description is intended to be illustrative and not restrictive.

Ala Leu Ala Pro Val Val Ser Val Phe Val Ala Gly Leu Gln Lys Leu
625 630 635 640

Val Asp Gly Phe Asn Ser Leu Pro Gly Pro Val Gln Lys Ala Ile Ala
645 650 655

Ile Thr Gly Gly Ile Val Leu Ala Leu Thr Ala Val Ala Thr Ala Ile
660 665 670

Gly Val Val Leu Ala Ala Phe Gly Met Ile Ala Ser Gly Ile Gly Ser
675 680 685

Leu Ser Leu Ala Leu Ala Ser Val Gly Gly Ile Ala Gly Ile Ala Ala
690 695 700

Gly Ala Val Gly Phe Leu Gly Ser Ala Leu Ala Val Leu Thr Gly Pro
705 710 715 720

Ile Gly Leu Val Ala Ala Ala Leu Ile Gly Thr Gly Val Val Ala Tyr
725 730 735

Lys Ala Tyr Gln Lys Ala Thr Glu Asp Ser Ile Ala Ser Val Asp Arg
740 745 750

Phe Ala Thr Asn Thr Glu Gly Lys Val Ser Ser Ser Thr Lys Lys Val
755 760 765

Leu Gly Glu Tyr Phe Lys Leu Ser Asp Gly Ile Arg Gln Lys Leu Thr
770 775 780

Glu Ile Arg Leu Asn His Glu Val Ile Thr Glu Glu Gln Ser Gln Lys
785 790 795 800

Leu Ile Gly Gln Tyr Asp Lys Leu Ala Asn Thr Ile Ile Glu Lys Thr
805 810 815

Asn Ala Arg Gln Gln Lys Glu Ile Glu Gly Leu Lys Lys Phe Phe Ala
820 825 830

Asp Ser Tyr Val Leu Thr Ala Glu Glu Glu Asn Lys Arg Ile Glu Gln
835 840 845

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Leu Asn Gln His Tyr Glu Gln Glu Lys Leu Lys Thr Gln Glu Lys Glu
 850 855 860

Asn Lys Ile Lys Glu Ile Leu Gln Thr Ala Ala Arg Glu Asn Arg Glu
 865 870 875 880

Leu Thr Thr Ser Glu Arg Ile Ser Leu Gln Ala Leu Gln Asp Glu Met
 885 890 895

Asp Arg Val Ala Val Glu His Met Ser Lys Asn Gln Met Glu Gln Lys
 900 905 910

Val Ile Leu Glu Asn Met Arg Val Gln Ala Ser Glu Ile Ser Ala Arg
 915 920 925

Gln Ala Ala Glu Val Val Glu Asn Ser Ala Lys Ala Arg Asp Lys Val
 930 935 940

Ile Glu Asp Ala Lys Lys Thr Arg Asp Glu Lys Ile Ala Glu Ala Ile
 945 950 955 960

Arg Gln Arg Asp Glu Asn Lys Thr Ile Thr Ala Asp Glu Ala Asn Ala
 965 970 975

Ile Ile Ala Glu Ala Lys Arg Gln Tyr Asp Ser Thr Val Ser Thr Ala
 980 985 990

Arg Asp Lys His Lys Glu Ile Val Ser Glu Ala Lys Ala Gln Ala Gly
 995 1000 1005

Glu His Ala Asn Gln Val Asp Trp Glu Thr Gly Gln Val Lys Ser
 1010 1015 1020

Lys Tyr Gln Ala Met Lys Asp Asp Val Ile Arg Lys Met Lys Glu
 1025 1030 1035

Met Trp Ser Asp Val Thr Asn Lys Tyr Glu Asp Met Lys Asn Ser
 1040 1045 1050

Ala Ser Asn Lys Val Glu Glu Ile Lys Asn Thr Val Ser Arg Lys
 1055 1060 1065

Phe Glu Glu Gln Lys Lys Ala Val Thr Asp Lys Met Ser Glu Ile

1080

Lys Ser Ser Ile Glu Asp Lys Trp Asn Thr Val Glu Lys Phe Phe
1085 1090 1095

Ser Ser Ile Asn Leu Arg Ser Ile Gly Lys Ser Ile Ile Glu Gly
1100 1105 1110

Leu Gly Lys Gly Ile Asp Asp Ala Ser Gly Gly Leu Phe Ser Lys
1115 1120 1125

Ala Ala Glu Ile Ala Ser Asp Ile Lys Lys Thr Ile Ser Gly Ala
1130 1135 1140

Leu Glu Ile Asn Ser Pro Ser Lys Val Met Ile Pro Val Gly Ser
1145 1150 1155

Ala Val Pro Glu Gly Val Gly Val Gly Met Asp Lys Gly Lys Arg
1160 1165 1170

Phe Val Val Asp Ala Ala Lys Asn Val Val Gly Thr Val Lys Lys
1175 1180 1185

Gln Met Gly Asn Met Pro Ser Val Phe Asp Phe Gly Phe Gln Thr
1190 1195 1200

Asn Gln Tyr Ser Ile Pro Gln Asn Thr Phe Ser Asp Phe Ser Gly
1205 1210 1215

Tyr Met Gln Pro Gln Leu Ser Tyr Asn Asn Pro Ser Met Ala Lys
1220 1225 1230

Thr Ile Phe Pro Asn Arg Pro Gly Gly Glu Gln Glu Leu Asn Leu
1235 1240 1245

Thr Val Asn Met Thr Asn Val Leu Asp Gly Lys Glu Leu Ala Asn
1250 1255 1260

Gly Ser Tyr Thr Tyr Thr Thr Lys Leu Gln Asn Arg Glu Gln Lys
1265 1270 1275

Arg Arg Ala Glu Phe
1280

<210> 29
<211> 496
<212> PRT
<213> Bacillus anthracis

<400> 29

Leu Gly Lys Leu Ser Phe Thr Phe Asn Asn Ile Arg Lys Asp Tyr Ile
1 5 10 15

Gln Met Leu Val Gly Arg Lys Arg Pro Ser Trp Ala Pro Val Lys Arg
20 25 30

Arg Leu Val Arg Val Pro His Arg Ala Gly Ala Leu Leu Leu Asn Thr
35 40 45

Glu Thr Glu Glu Arg Arg Ile Asp Val Pro Leu Val Ile Lys Ala Lys
50 55 60

Lys Asp Met Ala Asp Leu Gln Lys Leu Lys Glu Asp Leu Ala Asp Trp
65 70 75 80

Leu Tyr Thr Glu Gln Pro Ala Glu Leu Ile Phe Asp Asp Glu Leu Asp
85 90 95

Arg Thr Tyr Leu Ala Leu Ile Asp Gly Ser Val Asp Leu Asp Glu Ile
100 105 110

Val Asn Arg Gly Arg Gly Val Ile Thr Phe Val Cys Pro Met Pro Tyr
115 120 125

Lys Leu Gly Lys Thr Asn Thr His Lys Phe Thr Gln Glu Trp Ser Thr
130 135 140

Glu Thr Thr Ser Tyr Phe Thr Asn Lys Gly Ser Val Glu Ala Pro Ala
145 150 155 160

Leu Ile Glu Met Thr Val Lys Lys Pro Ser Thr Phe Leu Asp Val Trp
165 170 175

Phe Gly Glu Tyr Pro Asn Asn Arg Asp Tyr Phe Arg Ile Gly Tyr Pro
180 185 190

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Leu Thr Val Glu Glu Thr Thr Val Gln Glu Arg Glu Arg Val Met Trp
 195 200 205

Asp Glu Met Ala Thr Pro Ile Gly Trp Thr Pro Val Thr Gly Gln Phe
 210 215 220

Asp Asp Met Lys Gly Thr Gly Ser Phe Lys Ser Arg Gly Gly Tyr Ala
 225 230 235 240

Leu Tyr Cys Glu Asp Tyr Gly Lys Asp Val Gly Phe Tyr Gly Ala Ile
 245 250 255

Ala Lys Lys Asn Ile Pro Gly Gly Pro Leu Gln Asp Phe Glu Met Glu
 260 265 270

Ala Trp Met Thr Leu Lys Ser Lys Asn Ile Gly Glu Met Gly Arg Val
 275 280 285

Glu Val Leu Leu Leu Asp Glu Ala Ser Asn Val Val Ala Arg Ile Asn
 290 295 300

Met Asn Asp Leu Tyr Ala Thr Ala Glu Ile Thr Arg Ala His Met Lys
 305 310 315 320

Ile Gly Asn Ser Gly Thr Pro Asn Ser Phe Arg Lys Leu Val Asp Thr
 325 330 335

Ser Gly Tyr Tyr Ser Asn Thr Phe Asn Gln Phe Arg Gly Arg Leu Arg
 340 345 350

Ile Ala Arg Arg Gly Lys Val Trp Ser Val Tyr Val Ala Lys Phe Ile
 355 360 365

Asp Gly Thr Glu Lys Asp Gly Ala Ser Leu Val Glu Arg Trp Ile Asp
 370 375 380

Glu Thr Gly Asn Pro Met Thr Glu Arg Lys Ile Ala Gln Val Met Ile
 385 390 395 400

Ala Ile Cys Lys Trp Asp Asn His Gln Pro Val Asn Glu Ile Gln Ile
 405 410 415

Asp Asp Leu Lys Phe Trp Lys Val Asn Lys Val Pro Ser Asn Ala Gln

if the if it is not a part of the sequence

420

425

430

Pro Tyr Ile Phe Asp Thr Gly Asp Lys Ile Val Ile Asp Thr Glu Lys
435 440 445

Ser Leu Val Thr Ile Asn Gly Lys Asn Ala Ile Asn Ile Lys Glu Ile
450 455 460

Phe Ser Asn Phe Pro Val Ile Ile Arg Gly Asp Asn Arg Ile Asp Ile
465 470 475 480

Met Pro Pro Asp Val Asn Ala Thr Ile Ser Tyr Arg Glu Arg Tyr Arg
485 490 495

<210> 30

<211> 496

<212> PRT

<213> Bacillus anthracis

<400> 30

Met Gly Lys Leu Ser Phe Thr Phe Asn Asn Ile Arg Lys Asp Tyr Ile
1 5 10 15

Gln Met Leu Val Gly Arg Lys Arg Pro Ser Trp Ala Pro Val Lys Arg
20 25 30

Arg Leu Val Arg Val Pro His Arg Ala Gly Ala Leu Leu Leu Asn Thr
35 40 45

Glu Thr Glu Glu Arg Arg Ile Asp Val Pro Leu Val Ile Lys Ala Lys
50 55 60

Lys Asp Met Ala Asp Leu Gln Lys Leu Lys Glu Asp Leu Ala Asp Trp
65 70 75 80

Leu Tyr Thr Glu Gln Pro Ala Glu Leu Ile Phe Asp Asp Glu Leu Asp
85 90 95

Arg Thr Tyr Leu Ser Leu Ile Asp Gly Ser Val Asp Leu Asp Glu Ile
100 105 110

Val Asn Arg Gly Lys Gly Val Ile Thr Phe Val Cys Pro Met Pro Tyr
115 120 125

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Lys Leu Gly Lys Ile Asn Thr His Lys Phe Thr Gln Glu Trp Ser Thr
130 135 140

Glu Thr Thr Ser Tyr Phe Thr Asn Lys Gly Ser Val Glu Ala Pro Ala
145 150 155 160

Leu Ile Glu Met Thr Val Lys Lys Pro Ser Thr Phe Leu Asp Val Trp
165 170 175

Phe Gly Glu Tyr Pro His Asn Arg Asp Tyr Phe Arg Ile Gly Tyr Pro
180 185 190

Leu Thr Val Glu Glu Thr Thr Val Gln Glu Arg Glu Arg Val Met Trp
195 200 205

Asp Glu Met Ala Thr Pro Ile Gly Trp Thr Pro Val Thr Gly Gln Phe
210 215 220

Glu Glu Met Lys Gly Thr Gly Ser Phe Lys Ser Arg Gly Gly His Ala
225 230 235 240

Leu Tyr Cys Glu Asp Tyr Gly Lys Glu Thr Gly Phe Tyr Gly Ala Ile
245 250 255

Ala Lys Lys Asn Ile Pro Gly Gly Pro Leu Gln Asp Phe Glu Met Glu
260 265 270

Ala Trp Val Thr Leu Lys Ser Lys Asn Ile Ser Glu Met Gly Arg Val
275 280 285

Glu Val Leu Leu Leu Asp Glu Thr Ser Asn Val Ile Ser Arg Ile Asn
290 295 300

Met Asn Asp Leu Tyr Ala Thr Ala Glu Ile Thr Arg Ala His Met Thr
305 310 315 320

Ile Gly Asn Ser Gly Thr Pro Asn Ser Phe Arg Lys Leu Val Asp Thr
325 330 335

Ser Gly Phe Tyr Ser Thr Thr Phe Asn Gln Phe Arg Gly Arg Leu Arg
340 345 350

if the amino acid is not specified, the amino acid is as shown in the sequence.

Ile Ala Arg Arg Gly Lys Val Trp Ser Val Tyr Val Ala Lys Phe Ile
355 360 365

Asp Gly Thr Glu Lys Asp Gly Ala Ser Leu Val Glu Arg Trp Ile Asp
370 375 380

Glu Thr Gly Asn Pro Met Thr Glu Arg Lys Ile Ala Gln Val Met Ile
385 390 395 400

Ala Ile Cys Lys Trp Asp Asn His Gln Pro Ile Asn Glu Met Gln Ile
405 410 415

Asp Asp Leu Lys Ile Trp Lys Val Asn Lys Val Pro Ser Asn Ala Gln
420 425 430

Pro Tyr Ile Phe Asp Thr Gly Asp Lys Ile Val Ile Asp Thr Glu Lys
435 440 445

Ser Leu Val Thr Ile Asn Gly Glu Lys Ala Ile Asn Ile Lys Glu Ile
450 455 460

Phe Ser Asn Phe Pro Val Val Ile Arg Gly Glu Asn Arg Ile Asp Ile
465 470 475 480

Met Pro Pro Asp Val Asn Ala Thr Ile Ser Tyr Arg Glu Arg Tyr Arg
485 490 495

<210> 31
<211> 1331
<212> PRT
<213> Bacillus anthracis

<400> 31

Met Arg Thr Pro Ser Gly Ile Leu His Val Val Asp Phe Lys Thr Asp
1 5 10 15

Gln Ile Val Ala Ala Ile Gln Pro Glu Asp Tyr Trp Asp Asp Lys Arg
20 25 30

His Trp Glu Leu Lys Asn Asn Val Asp Met Leu Asp Phe Thr Ala Phe
35 40 45

Asp Gly Thr Asp His Ala Val Thr Leu Gln Gln Gln Asn Leu Val Leu
50 55 60

Lys Glu Val Arg Asp Gly Arg Ile Val Pro Tyr Val Ile Thr Glu Thr
65 70 75 80

Glu Lys Asn Ser Asp Thr Arg Ser Ile Thr Thr Tyr Ala Ser Gly Ala
85 90 95

Trp Ile Gln Ile Ala Lys Ser Gly Ile Ile Lys Pro Gln Arg Ile Glu
100 105 110

Ser Lys Thr Val Asn Glu Phe Met Asp Leu Ala Leu Leu Gly Met Lys
115 120 125

Trp Lys Arg Gly Ile Thr Glu Tyr Ala Gly Phe His Thr Met Thr Ile
130 135 140

Asp Glu Tyr Ile Asp Pro Leu Thr Phe Leu Lys Lys Ile Ala Ser Leu
145 150 155 160

Phe Lys Leu Glu Ile Arg Tyr Arg Val Glu Ile Lys Gly Ser Arg Ile
165 170 175

Ile Gly Trp Tyr Val Asp Met Ile Gln Lys Arg Gly His Asp Thr Gly
180 185 190

Lys Glu Ile Glu Leu Gly Lys Asp Leu Val Gly Val Thr Arg Ile Glu
195 200 205

His Thr Arg Asn Ile Cys Ser Ala Leu Val Gly Phe Val Lys Gly Glu
210 215 220

Gly Asp Lys Val Ile Thr Ile Glu Ser Ile Asn Lys Gly Leu Pro Tyr
225 230 235 240

Ile Val Asp Ala Asp Ala Phe Gln Arg Trp Asn Glu His Gly Gln His
245 250 255

Lys Phe Gly Phe Tyr Thr Pro Glu Thr Glu Glu Leu Asp Met Thr Pro
260 265 270

Lys Arg Leu Leu Thr Leu Met Glu Ile Glu Leu Lys Lys Arg Val Asn
275 280 285

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Ser Ser Ile Ser Tyr Glu Val Glu Ala Gln Ser Ile Gly Arg Ile Phe
 290 295 300

Gly Leu Glu His Glu Leu Ile Asn Glu Gly Asp Thr Ile Lys Ile Lys
 305 310 315 320

Asp Thr Gly Phe Thr Pro Glu Leu Tyr Leu Glu Ala Arg Val Ile Ala
 325 330 335

Gly Asp Glu Ser Phe Thr Asp Ser Thr Gln Asp Lys Tyr Glu Phe Gly
 340 345 350

Asp Tyr Arg Glu Ile Val Asn Gln Asn Glu Glu Leu Arg Lys Ile Tyr
 355 360 365

Asn Arg Ile Leu Ser Ser Leu Gly Asn Lys Gln Glu Met Ile Asp Gln
 370 375 380

Leu Asp Arg Leu Val Gln Glu Ala Asn Glu Thr Ala Ser Asn Ala Lys
 385 390 395 400

Lys Glu Ser Glu Ala Ala Lys Thr Leu Ala Glu Lys Val Gln Glu Asn
 405 410 415

Ile Lys Asn Asn Thr Val Glu Ile Ile Glu Ser Lys Asn Pro Pro Thr
 420 425 430

Thr Gly Leu Lys Pro Phe Lys Thr Leu Trp Arg Asp Ile Ser Ile Gly
 435 440 445

Lys Pro Gly Ile Leu Lys Ile Trp Thr Gly Thr Ala Trp Glu Ser Val
 450 455 460

Val Pro Asp Val Glu Ser Val Lys Lys Glu Thr Leu Asp Gln Val Asn
 465 470 475 480

Lys Asp Ile Ala Thr Thr Lys Thr Glu Leu Asn Gln Lys Val Gln Glu
 485 490 495

Ala Gln Asn Gln Ala Thr Gly Gln Phe Asn Glu Val Lys Glu Ser Leu
 500 505 510

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Gln Gly Val Ser Arg Thr Ile Ser Asn Val Glu Asn Lys Gln Gly Glu
 515 520 525

Ile Asp Lys Lys Ile Thr Lys Phe Glu Gln Asp Ser Ser Gly Phe Lys
 530 535 540

Thr Ser Ile Glu Ser Leu Thr Lys Lys Asp Thr Glu Ile Ser Asn Lys
 545 550 555 560

Leu Asn Thr Val Glu Ser Thr Val Glu Gly Thr Lys Lys Thr Ile Ser
 565 570 575

Glu Val Gln Gln Thr Thr Asn Asp Leu Lys Lys Lys Thr Thr Glu Ile
 580 585 590

Glu Glu Lys Ala Gly Lys Ile Thr Glu Lys Leu Thr Ser Leu Glu Thr
 595 600 605

Arg Glu Val Asn Val Arg Asn Tyr Val Ile Asn Ser Asp Phe Ser Asn
 610 615 620

Val Thr Asn Ser Trp Ile Gly Ile Thr Asn Ala Thr Leu Phe Lys Phe
 625 630 635 640

Val Asp Val Asn Ile Ser Glu Ala Ser Ala Ile Lys Lys Gly Leu Gln
 645 650 655

Ile Thr Ser Asn Lys Ala Phe Val Tyr Gln Lys Leu Pro Ala Asp Val
 660 665 670

Phe Lys Lys Lys Lys Gly Ile Ala Ser Cys Tyr Ile Asn Val Ser Ser
 675 680 685

Phe Thr Pro Gly Thr Asp Tyr Pro Arg Leu Tyr Met Arg Phe Thr Tyr
 690 695 700

Asp Gln Asn Gly Thr Glu Lys Gln Tyr Tyr Ala Ile Leu Lys Gln Gln
 705 710 715 720

Glu Val Thr Asn Gly Trp Ile Arg Ile Ser Ile Pro Phe Asp Thr Thr
 725 730 735

Gly Tyr Thr Gly Glu Leu Lys Glu Val Arg Val Asn Ile Ala Thr Ala

740 745 750
 Asp Thr Thr Thr Ile Asp Ala Thr Phe Thr Gly Ile Met Val Thr Phe
 755 760 765
 Gly Asp Leu Ile Glu Ser Trp Asn Leu Ala Pro Glu Asp Gly Val Thr
 770 775 780
 Gln Gly Val Phe Gln Ser Lys Thr Thr Glu Ile Glu Lys Ser Val Asp
 785 790 795 800
 Gly Val Lys Thr Thr Val Thr Asn Val Gln Asn Ser Gln Ala Gly Phe
 805 810 815
 Glu Lys Arg Met Ser Asn Val Glu Gln Thr Ala Thr Gly Leu Ser Ser
 820 825 830
 Thr Val Ser Asn Leu Asn Asn Val Val Ser Asp Gln Gly Lys Lys Leu
 835 840 845
 Thr Glu Ala Asn Thr Lys Leu Glu Gln Gln Ala Thr Ala Ile Gly Ala
 850 855 860
 Lys Val Glu Leu Lys Gln Val Glu Asp Tyr Val Ala Gly Phe Lys Ile
 865 870 875 880
 Pro Glu Leu Lys Gln Thr Val Asp Lys Asn Lys Gln Asp Leu Leu Asp
 885 890 895
 Glu Leu Ala Asn Lys Leu Ala Thr Glu Gln Phe Asn Gln Lys Met Thr
 900 905 910
 Leu Ile Asp Asn Arg Phe Thr Ile Asn Glu Gln Gly Ile Asn Ala Ala
 915 920 925
 Ala Lys Lys Thr Glu Val Tyr Thr Lys Thr Gln Ala Asp Gly Gln Phe
 930 935 940
 Ala Thr Asp Ser Tyr Val Arg Asp Met Glu Ser Arg Leu Gln Leu Thr
 945 950 955 960
 Glu Lys Gly Val Ser Ile Ser Val Lys Glu Asn Asp Val Ile Ala Ala
 965 970 975

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Ile Asn Met Ser Lys Glu Asn Ile Lys Leu Asn Ala Ala Arg Ile Asp
 980 985 990

Leu Val Gly Lys Val Asn Ala Glu Trp Ile Lys Ala Gly Leu Leu Ser
 995 1000 1005

Gly Cys Gln Ile Arg Thr Ser Asn Thr Asp Asn Tyr Val Ser Leu
 1010 1015 1020

Asp Asp Gln Phe Ile Arg Leu Tyr Glu Arg Gly Val Ala Arg Ala
 1025 1030 1035

Phe Leu Gly His Tyr Arg Arg Ser Asp Gly Ala Val Gln Pro Thr
 1040 1045 1050

Phe Ile Leu Gly Ser Asp Glu Lys Thr Asn Ala Pro Glu Gly Thr
 1055 1060 1065

Leu Phe Met Ser Gln Ala Gly Ala Gly Trp Ser Gly Ala Tyr Ala
 1070 1075 1080

Ser Ile Gly Ile Ser Asn Gly Ile Val Asp Gly Ala Val Gln Lys
 1085 1090 1095

Ser Val Tyr Trp Glu Leu Gln Arg Asn Gly Leu Ser Val Leu Asn
 1100 1105 1110

Ala Asn Asp Tyr His Val Phe Tyr Ala Gly Asn Gly Asn Trp Tyr
 1115 1120 1125

Phe Arg Arg Gly Lys Pro Gly Leu Tyr Gln Thr Ser Leu Val Val
 1130 1135 1140

Glu Asp Asn Ser Thr Asp Ser Asp Leu Arg Leu Pro Asn Val Thr
 1145 1150 1155

Ile Arg Asn Ser Arg Ala Ala Gly Tyr Thr Gly Val Ile Gln Leu
 1160 1165 1170

Lys Ser Pro Val Thr Gln Asn Gly Trp Gly Ala Val Gln Gly Asn
 1175 1180 1185

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Phe Met Thr Pro Ser Leu Arg Glu Tyr Lys Ser Asn Ile Arg Asp
 1190 1195 1200

Ile Ser Phe Ser Ala Leu Glu Lys Ile Arg Ser Leu Lys Ile Arg
 1205 1210 1215

Gln Phe Asn Tyr Lys Asn Ala Val Asn Glu Leu Tyr Arg Met Arg
 1220 1225 1230

Glu Glu Lys Ser Pro Asn Asp Pro Pro Leu Thr Thr Glu Asp Ile
 1235 1240 1245

Lys Thr Tyr Tyr Gly Leu Ile Val Asp Glu Cys Asp Glu Met Phe
 1250 1255 1260

Val Asp Glu Ser Gly Lys Gly Ile His Leu Tyr Ser Tyr Ala Ser
 1265 1270 1275

Ile Gly Ile Lys Gly Leu Gln Glu Val Asp Ala Thr Val Gln Glu
 1280 1285 1290

Gln Glu Val Glu Ile Ala Asn Leu Lys Ser Gln Ile Ala Ser Gln
 1295 1300 1305

Glu Asp Arg Ile Ala Arg Leu Glu Glu Leu Leu Leu Gln Gln Leu
 1310 1315 1320

Ile Asn Lys Lys Pro Glu Gln Pro
 1325 1330

<210> 32
 <211> 1331
 <212> PRT
 <213> Bacillus anthracis

<400> 32

Met Arg Thr Pro Ser Gly Ile Leu His Val Val Asp Phe Lys Thr Asp
 1 5 10 15

Gln Ile Val Ala Ala Ile Gln Pro Glu Asp Tyr Trp Asp Asp Lys Arg
 20 25 30

His Trp Glu Leu Lys Asn Asn Val Asp Met Leu Asp Phe Thr Ala Phe

Protein of the present invention

35

40

45

Asp Gly Thr Asp His Ala Val Thr Leu Gln Gln Gln Asn Leu Val Leu
50 55 60

Lys Glu Val Arg Asp Gly Arg Ile Val Pro Tyr Val Ile Thr Glu Thr
65 70 75 80

Glu Lys Asn Ser Asp Thr Arg Ser Ile Thr Thr Tyr Ala Ser Gly Ala
85 90 95

Trp Ile Gln Ile Ala Lys Ser Gly Ile Ile Lys Pro Gln Arg Ile Glu
100 105 110

Ser Lys Thr Val Asn Glu Phe Met Asp Leu Ala Leu Leu Gly Met Lys
115 120 125

Trp Lys Arg Gly Ile Thr Glu Tyr Ala Gly Phe His Thr Met Thr Ile
130 135 140

Asp Glu Tyr Ile Asp Pro Leu Thr Phe Leu Lys Lys Ile Ala Ser Leu
145 150 155 160

Phe Lys Leu Glu Ile Arg Tyr Arg Val Glu Ile Lys Gly Ser Arg Ile
165 170 175

Ile Gly Trp Tyr Val Asp Met Ile Gln Lys Arg Gly His Asp Thr Gly
180 185 190

Lys Glu Ile Glu Leu Gly Lys Asp Leu Val Gly Val Thr Arg Ile Glu
195 200 205

His Thr Arg Asn Ile Cys Ser Ala Leu Val Gly Phe Val Lys Gly Glu
210 215 220

Gly Asp Lys Val Ile Thr Ile Glu Ser Ile Asn Lys Gly Leu Pro Tyr
225 230 235 240

Ile Val Asp Ala Asp Ala Phe Gln Arg Trp Asn Glu His Gly Gln His
245 250 255

Lys Phe Gly Phe Tyr Thr Pro Glu Thr Glu Glu Leu Asp Met Thr Pro
260 265 270

if the sequence is not a protein sequence, the sequence is not a protein sequence

Lys Arg Leu Leu Thr Leu Met Glu Ile Glu Leu Lys Lys Arg Val Asn
275 280 285

Ser Ser Ile Ser Tyr Glu Val Glu Ala Gln Ser Ile Gly Arg Ile Phe
290 295 300

Gly Leu Glu His Glu Leu Ile Asn Glu Gly Asp Thr Ile Lys Ile Lys
305 310 315 320

Asp Thr Gly Phe Thr Pro Glu Leu Tyr Leu Glu Ala Arg Val Ile Ala
325 330 335

Gly Asp Glu Ser Phe Thr Asp Ser Thr Gln Asp Lys Tyr Glu Phe Gly
340 345 350

Asp Tyr Arg Glu Ile Val Asn Gln Asn Glu Glu Leu Arg Lys Ile Tyr
355 360 365

Asn Arg Ile Leu Ser Ser Leu Gly Asn Lys Gln Glu Met Ile Asp Gln
370 375 380

Leu Asp Arg Leu Val Gln Glu Ala Asn Glu Thr Ala Ser Asn Ala Lys
385 390 395 400

Lys Glu Ser Glu Ala Ala Lys Thr Leu Ala Glu Lys Val Gln Glu Asn
405 410 415

Ile Lys Asn Asn Thr Val Glu Ile Ile Glu Ser Lys Asn Pro Pro Thr
420 425 430

Thr Gly Leu Lys Pro Phe Lys Thr Leu Trp Arg Asp Ile Ser Ile Gly
435 440 445

Lys Pro Gly Ile Leu Lys Ile Trp Thr Gly Thr Ala Trp Glu Ser Val
450 455 460

Val Pro Asp Val Glu Ser Val Lys Lys Glu Thr Leu Asp Gln Val Asn
465 470 475 480

Lys Asp Ile Ala Thr Thr Lys Thr Glu Leu Asn Gln Lys Val Gln Glu
485 490 495

It is to be understood that the present disclosure is not limited to the specific details disclosed herein.

Ala Gln Asn Gln Ala Thr Gly Gln Phe Asn Glu Val Lys Glu Ser Leu
500 505 510

Gln Gly Val Ser Arg Thr Ile Ser Asn Val Glu Asn Lys Gln Gly Glu
515 520 525

Ile Asp Lys Lys Ile Thr Lys Phe Glu Gln Asp Ser Ser Gly Phe Lys
530 535 540

Thr Ser Ile Glu Ser Leu Thr Lys Lys Asp Thr Glu Ile Ser Asn Lys
545 550 555 560

Leu Asn Thr Val Glu Ser Thr Val Glu Gly Thr Lys Lys Thr Ile Ser
565 570 575

Glu Val Gln Gln Thr Thr Asn Asp Leu Lys Lys Lys Thr Thr Glu Ile
580 585 590

Glu Glu Lys Ala Gly Lys Ile Thr Glu Lys Leu Thr Ser Leu Glu Thr
595 600 605

Arg Glu Val Asn Val Arg Asn Tyr Val Ile Asn Ser Asp Phe Ser Asn
610 615 620

Val Thr Asn Ser Trp Ile Gly Ile Thr Asn Ala Thr Leu Phe Lys Phe
625 630 635 640

Val Asp Val Asn Ile Ser Glu Ala Ser Ala Ile Lys Lys Gly Leu Gln
645 650 655

Ile Thr Ser Asn Lys Ala Phe Val Tyr Gln Lys Leu Pro Ala Asp Val
660 665 670

Phe Lys Lys Lys Lys Gly Ile Ala Ser Cys Tyr Ile Asn Val Ser Ser
675 680 685

Phe Thr Pro Gly Thr Asp Tyr Pro Arg Leu Tyr Met Arg Phe Thr Tyr
690 695 700

Asp Gln Asn Gly Thr Glu Lys Gln Tyr Tyr Ala Ile Leu Lys Gln Gln
705 710 715 720

Glu Val Thr Asn Gly Trp Ile Arg Ile Ser Ile Pro Phe Asp Thr Thr
725 730 735

Gly Tyr Thr Gly Glu Leu Lys Glu Val Arg Val Asn Ile Ala Thr Ala
740 745 750

Asp Thr Thr Thr Ile Asp Ala Thr Phe Thr Gly Ile Met Val Thr Phe
755 760 765

Gly Asp Leu Ile Glu Ser Trp Asn Leu Ala Pro Glu Asp Gly Val Thr
770 775 780

Gln Gly Val Phe Gln Ser Lys Thr Thr Glu Ile Glu Lys Ser Val Asp
785 790 795 800

Gly Val Lys Thr Thr Val Thr Asn Val Gln Asn Ser Gln Ala Gly Phe
805 810 815

Glu Lys Arg Met Ser Asn Val Glu Gln Thr Ala Thr Gly Leu Ser Ser
820 825 830

Thr Val Ser Asn Leu Asn Asn Val Val Ser Asp Gln Gly Lys Lys Leu
835 840 845

Thr Glu Ala Asn Thr Lys Leu Glu Gln Gln Ala Thr Ala Ile Gly Ala
850 855 860

Lys Val Glu Leu Lys Gln Val Glu Asp Tyr Val Ala Gly Phe Lys Ile
865 870 875 880

Pro Glu Leu Lys Gln Thr Val Asp Lys Asn Lys Gln Asp Leu Leu Asp
885 890 895

Glu Leu Ala Asn Lys Leu Ala Thr Glu Gln Phe Asn Gln Lys Met Thr
900 905 910

Leu Ile Asp Asn Arg Phe Thr Ile Asn Glu Gln Gly Ile Asn Ala Ala
915 920 925

Ala Lys Lys Thr Glu Val Tyr Thr Lys Thr Gln Ala Asp Gly Gln Phe
930 935 940

Ala Thr Asp Ser Tyr Val Arg Asp Met Glu Ser Arg Leu Gln Leu Thr

Sequence of the amino acid sequence of the protein

945		950		955		960
Glu Lys Gly Val Ser Ile Ser Val Lys Glu Asn Asp Val Ile Ala Ala						
	965		970		975	
Ile Asn Met Ser Lys Glu Asn Ile Lys Leu Asn Ala Ala Arg Ile Asp						
	980		985		990	
Leu Val Gly Lys Val Asn Ala Glu Trp Ile Lys Ala Gly Leu Leu Ser						
	995		1000		1005	
Gly Cys Gln Ile Arg Thr Ser Asn Thr Asp Asn Tyr Val Ser Leu						
	1010		1015		1020	
Asp Asp Gln Phe Ile Arg Leu Tyr Glu Arg Gly Val Ala Arg Ala						
	1025		1030		1035	
Phe Leu Gly His Tyr Arg Arg Ser Asp Gly Ala Val Gln Pro Thr						
	1040		1045		1050	
Phe Ile Leu Gly Ser Asp Glu Lys Thr Asn Ala Pro Glu Gly Thr						
	1055		1060		1065	
Leu Phe Met Ser Gln Ala Gly Ala Gly Trp Ser Gly Ala Tyr Ala						
	1070		1075		1080	
Ser Ile Gly Ile Ser Asn Gly Ile Val Asp Gly Ala Val Gln Lys						
	1085		1090		1095	
Ser Val Tyr Trp Glu Leu Gln Arg Asn Gly Leu Ser Val Leu Asn						
	1100		1105		1110	
Ala Asn Asp Tyr His Val Phe Tyr Ala Gly Asn Gly Asn Trp Tyr						
	1115		1120		1125	
Phe Arg Arg Gly Lys Pro Gly Leu Tyr Gln Thr Ser Leu Val Val						
	1130		1135		1140	
Glu Asp Asn Ser Thr Asp Ser Asp Leu Arg Leu Pro Asn Val Thr						
	1145		1150		1155	
Ile Arg Asn Ser Arg Ala Ala Gly Tyr Thr Gly Val Ile Gln Leu						
	1160		1165		1170	

1175 1180 1185 1190 1195 1200 1205 1210 1215 1220 1225 1230 1235 1240 1245 1250 1255 1260 1265 1270 1275 1280 1285 1290 1295 1300 1305 1310 1315 1320 1325 1330

Lys Ser Pro Val Thr Gln Asn Gly Trp Gly Ala Val Gln Gly Asn
 1175 1180 1185

Phe Met Thr Pro Ser Leu Arg Glu Tyr Lys Ser Asn Ile Arg Asp
 1190 1195 1200

Ile Ser Phe Ser Ala Leu Glu Lys Ile Arg Ser Leu Lys Ile Arg
 1205 1210 1215

Gln Phe Asn Tyr Lys Asn Ala Val Asn Glu Leu Tyr Arg Met Arg
 1220 1225 1230

Glu Glu Lys Ser Pro Asn Asp Pro Pro Leu Thr Thr Glu Asp Ile
 1235 1240 1245

Lys Thr Tyr Tyr Gly Leu Ile Val Asp Glu Cys Asp Glu Met Phe
 1250 1255 1260

Val Asp Glu Ser Gly Lys Gly Ile His Leu Tyr Ser Tyr Ala Ser
 1265 1270 1275

Ile Gly Ile Lys Gly Leu Gln Glu Val Asp Ala Thr Val Gln Glu
 1280 1285 1290

Gln Glu Val Glu Ile Ala Asn Leu Lys Ser Gln Ile Ala Ser Gln
 1295 1300 1305

Glu Asp Arg Ile Ala Arg Leu Glu Glu Leu Leu Leu Gln Gln Leu
 1310 1315 1320

Ile Asn Lys Lys Pro Glu Gln Pro
 1325 1330

<210> 33

<211> 141

<212> PRT

<213> Bacillus anthracis

<400> 33

Met Asp Arg Ile Asp Val Leu Leu Lys Ala Phe Ile Ala Ala Phe Gly
 1 5 10 15

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Gly Phe Cys Gly Tyr Phe Leu Gly Gly Trp Asp Ala Thr Leu Lys Ile
 20 25 30

Leu Val Thr Met Val Val Ile Asp Tyr Leu Thr Gly Met Ile Ala Ala
 35 40 45

Gly Tyr Asn Gly Glu Leu Lys Ser Lys Val Gly Phe Lys Gly Ile Ala
 50 55 60

Lys Lys Val Val Leu Phe Leu Leu Val Gly Ala Ala Ala Gln Leu Asp
 65 70 75 80

Ser Ala Leu Gly Ser Asn Ser Ala Ile Arg Glu Ala Thr Ile Phe Phe
 85 90 95

Phe Met Gly Asn Glu Leu Leu Ser Leu Leu Glu Asn Ala Gly Arg Met
 100 105 110

Gly Ile Pro Leu Pro Gln Ala Leu Thr Asn Ala Val Glu Ile Leu Gly
 115 120 125

Gly Lys Gln Lys Gln Glu Glu Lys Lys Gly Asp Val Gln
 130 135 140

<210> 34
 <211> 141
 <212> PRT
 <213> Bacillus anthracis

<400> 34

Met Asp Arg Ile Asp Val Leu Leu Lys Ala Phe Ile Ala Ala Phe Gly
 1 5 10 15

Gly Phe Cys Gly Tyr Phe Leu Gly Gly Trp Asp Ala Thr Leu Lys Ile
 20 25 30

Leu Val Thr Met Val Val Ile Asp Tyr Leu Thr Gly Met Ile Ala Ala
 35 40 45

Gly Tyr Asn Gly Glu Leu Lys Ser Lys Val Gly Phe Lys Gly Ile Ala
 50 55 60

Lys Lys Val Val Leu Phe Leu Leu Val Gly Ala Ala Ala Gln Leu Asp
 65 70 75 80

Ser Ala Leu Gly Ser Asn Ser Ala Ile Arg Glu Ala Thr Ile Phe Phe
85 90 95

Phe Met Gly Asn Glu Leu Leu Ser Leu Leu Glu Asn Ala Gly Arg Met
100 105 110

Gly Ile Pro Leu Pro Gln Ala Leu Thr Asn Ala Val Glu Ile Leu Gly
115 120 125

Gly Lys Gln Lys Gln Glu Glu Lys Lys Gly Asp Val Gln
130 135 140

<210> 35

<211> 233

<212> PRT

<213> Bacillus anthracis

<400> 35

Met Glu Ile Gln Lys Lys Leu Val Asp Pro Ser Lys Tyr Gly Thr Lys
1 5 10 15

Cys Pro Tyr Thr Met Lys Pro Lys Tyr Ile Thr Val His Asn Thr Tyr
20 25 30

Asn Asp Ala Pro Ala Glu Asn Glu Val Ser Tyr Met Ile Ser Asn Asn
35 40 45

Asn Glu Val Ser Phe His Ile Ala Val Asp Asp Lys Lys Ala Ile Gln
50 55 60

Gly Ile Pro Leu Glu Arg Asn Ala Trp Ala Cys Gly Asp Gly Asn Gly
65 70 75 80

Ser Gly Asn Arg Gln Ser Ile Ser Val Glu Ile Cys Tyr Ser Lys Ser
85 90 95

Gly Gly Asp Arg Tyr Tyr Lys Ala Glu Asp Asn Ala Val Asp Val Val
100 105 110

Arg Gln Leu Met Ser Met Tyr Asn Ile Pro Ile Glu Asn Val Arg Thr
115 120 125

Sequence of the protein

His Gln Ser Trp Ser Gly Lys Tyr Cys Pro His Arg Met Leu Ala Glu
130 135 140

Gly Arg Trp Gly Ala Phe Ile Gln Lys Val Lys Asn Gly Asn Val Ala
145 150 155 160

Thr Thr Ser Pro Thr Lys Gln Asn Ile Ile Gln Ser Gly Ala Phe Ser
165 170 175

Pro Tyr Glu Thr Pro Asp Val Met Gly Ala Leu Thr Ser Leu Lys Met
180 185 190

Thr Ala Asp Phe Ile Leu Gln Ser Asp Gly Leu Thr Tyr Phe Ile Ser
195 200 205

Lys Pro Thr Ser Asp Ala Gln Leu Lys Ala Met Lys Glu Tyr Leu Asp
210 215 220

Arg Lys Gly Trp Trp Tyr Glu Val Lys
225 230

<210> 36
<211> 233
<212> PRT
<213> Bacillus anthracis

<400> 36

Met Glu Ile Gln Lys Lys Leu Val Asp Pro Ser Lys Tyr Gly Thr Lys
1 5 10 15

Cys Pro Tyr Thr Met Lys Pro Lys Tyr Ile Thr Val His Asn Thr Tyr
20 25 30

Asn Asp Ala Pro Ala Glu Asn Glu Val Ser Tyr Met Ile Ser Asn Asn
35 40 45

Asn Glu Val Ser Phe His Ile Ala Val Asp Asp Lys Lys Ala Ile Gln
50 55 60

Gly Ile Pro Leu Glu Arg Asn Ala Trp Ala Cys Gly Asp Gly Asn Gly
65 70 75 80

Ser Gly Asn Arg Gln Ser Ile Ser Val Glu Ile Cys Tyr Ser Lys Ser
85 90 95

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Gly Gly Asp Arg Tyr Tyr Lys Ala Glu Asp Asn Ala Val Asp Val Val
 100 105 110

Arg Gln Leu Met Ser Met Tyr Asn Ile Pro Ile Glu Asn Val Arg Thr
 115 120 125

His Gln Ser Trp Ser Gly Lys Tyr Cys Pro His Arg Met Leu Ala Glu
 130 135 140

Gly Arg Trp Gly Ala Phe Ile Gln Lys Val Lys Asn Gly Asn Val Ala
 145 150 155 160

Thr Thr Ser Pro Thr Lys Gln Asn Ile Ile Gln Ser Gly Ala Phe Ser
 165 170 175

Pro Tyr Glu Thr Pro Asp Val Met Gly Ala Leu Thr Ser Leu Lys Met
 180 185 190

Thr Ala Asp Phe Ile Leu Gln Ser Asp Gly Leu Thr Tyr Phe Ile Ser
 195 200 205

Lys Pro Thr Ser Asp Ala Gln Leu Lys Ala Met Lys Glu Tyr Leu Asp
 210 215 220

Arg Lys Gly Trp Trp Tyr Glu Val Lys
 225 230

<210> 37
 <211> 165
 <212> PRT
 <213> Bacillus anthracis

<400> 37

Met Lys Met Tyr Lys Lys Leu Ile Ser Ile Cys Ile Gly Ser Thr Leu
 1 5 10 15

Leu Leu Gly Leu Thr Ala Cys Asp Ser Ser Lys Gln Ser Glu Ser Ser
 20 25 30

Glu Lys Thr Asn Val Lys Ser Gln Pro Glu Thr Lys Lys Asp Leu Thr
 35 40 45

FIG. 1: Sequence alignment of Bacillus anthracis

Ser Gln Asp Glu Leu Asn Lys Lys Ile Lys Gln Asp Ala Glu Glu Val
50 55 60

Ser Phe Val Lys Ala Asn Gly Asp Gln Tyr Glu Lys Gly Lys Arg Leu
65 70 75 80

Lys Ala Thr Gly Thr Val Asp Leu Leu Lys Ser Ser Ala Leu Pro
85 90 95

Ser Phe Val Ile Ser Thr Asn Glu Asn Asp Gly Lys Gly Met Tyr Thr
100 105 110

Ile Gln Ile Val Gln Ser Gly Val Gln Thr Asn Glu Asn Glu Ile Thr
115 120 125

Leu Lys Asn Gly Leu Lys Ile Ser Lys Gly Ser Ile Val Thr Ile Tyr
130 135 140

Gly Ala Tyr Asp Glu Lys Asp Lys Thr Gly Met Pro Lys Ile Ser Ala
145 150 155 160

Thr Val Ile Glu Gln
165

<210> 38
<211> 165
<212> PRT
<213> Bacillus anthracis

<400> 38

Met Lys Met Tyr Lys Lys Leu Ile Ser Ile Cys Ile Gly Ser Thr Leu
1 5 10 15

Leu Leu Gly Leu Thr Ala Cys Asp Ser Ser Lys Gln Ser Glu Ser Ser
20 25 30

Glu Lys Thr Asn Val Lys Ser Gln Pro Glu Thr Lys Lys Asp Leu Thr
35 40 45

Ser Gln Asp Glu Leu Asn Lys Lys Ile Lys Gln Asp Ala Glu Glu Val
50 55 60

Ser Phe Val Lys Ala Asn Gly Asp Gln Tyr Glu Lys Gly Lys Arg Leu
65 70 75 80

Patent application of Bacillus anthracis

Lys Ala Thr Gly Thr Val Asp Leu Leu Leu Lys Ser Ser Ala Leu Pro
85 90 95

Ser Phe Val Ile Ser Thr Asn Glu Asn Asp Gly Lys Gly Met Tyr Thr
100 105 110

Ile Gln Ile Val Gln Ser Gly Val Gln Thr Asn Glu Asn Glu Ile Thr
115 120 125

Leu Lys Asn Gly Leu Lys Ile Ser Lys Gly Ser Ile Val Thr Ile Tyr
130 135 140

Gly Ala Tyr Asp Glu Lys Asp Lys Thr Gly Met Pro Lys Ile Ser Ala
145 150 155 160

Thr Val Ile Glu Gln
165

<210> 39
<211> 70
<212> PRT
<213> Bacillus anthracis

<400> 39

Val Arg Leu Lys Cys Lys Leu Arg Val Ile Phe Ala Glu Arg Glu Ile
1 5 10 15

Arg Gln Lys Glu Phe Ser Lys Leu Ile Gly Ile Ser Gln Thr Thr Met
20 25 30

Ser Ser Leu Val Asn Asn Thr Thr Leu Pro Thr Phe Leu Thr Ala Tyr
35 40 45

Lys Ile Ala Lys Glu Leu Lys Leu His Met Glu Glu Ile Trp Ile Glu
50 55 60

Glu Glu Asn Glu Asn Val
65 70

<210> 40
<211> 70
<212> PRT
<213> Bacillus anthracis

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<400> 40

Val Arg Leu Lys Cys Lys Leu Arg Val Ile Phe Ala Glu Arg Glu Ile
 1 5 10 15

Arg Gln Lys Glu Phe Ser Lys Leu Ile Gly Ile Ser Gln Thr Thr Met
 20 25 30

Ser Ser Leu Val Asn Asn Thr Thr Leu Pro Thr Phe Leu Thr Ala Tyr
 35 40 45

Lys Ile Ala Lys Glu Leu Lys Leu His Met Glu Glu Ile Trp Ile Glu
 50 55 60

Glu Glu Asn Glu Asn Val
 65 70

<210> 41

<211> 102

<212> PRT

<213> Bacillus anthracis

<400> 41

Met Arg Trp Gln Tyr Asn His Leu Asn Thr Thr Pro Tyr Leu His Pro
 1 5 10 15

Ser Lys Glu Leu Cys Ser Met Tyr Asn Gly Ser Arg Ser Arg Ala Glu
 20 25 30

Thr Glu Ser Ile Leu Asn His Met Lys Asn His Glu Val Tyr Asp Arg
 35 40 45

Lys Glu Tyr Lys Gly Tyr Phe Ser Leu Ser Gln Val Leu Glu Glu Asp
 50 55 60

Leu Tyr Gly Glu Glu Glu Asp Val Leu Asn Trp Glu Ile Leu Met Asp
 65 70 75 80

Cys Tyr Asp Val Val Leu Thr Arg Lys Gly Ile Ala Phe Arg Glu Lys
 85 90 95

Glu Glu Glu Glu Gln Ala
 100

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<210> 42
 <211> 102
 <212> PRT
 <213> Bacillus anthracis

<400> 42

Met Arg Trp Gln Tyr Asn His Leu Asn Thr Thr Pro Tyr Leu His Pro
 1 5 10 15

Ser Lys Glu Leu Cys Ser Met Tyr Asn Gly Ser Arg Ser Arg Ala Glu
 20 25 30

Thr Glu Ser Ile Leu Asn His Met Lys Asn His Glu Val Tyr Asp Arg
 35 40 45

Lys Glu Tyr Lys Gly Tyr Phe Ser Leu Ser Gln Val Leu Glu Glu Asp
 50 55 60

Leu Tyr Gly Glu Glu Glu Asp Val Leu Asn Trp Glu Ile Leu Met Asp
 65 70 75 80

Cys Tyr Asp Val Val Leu Thr Arg Lys Gly Ile Ala Phe Arg Glu Lys
 85 90 95

Glu Glu Glu Glu Gln Ala
 100

<210> 43
 <211> 60
 <212> PRT
 <213> Bacillus anthracis

<400> 43

Met Thr Leu Ala Gly Glu Ala Ile Ile Ile Trp Thr Ala Thr Gly Leu
 1 5 10 15

Ser Val Val Ala Met Lys Ala Ala Glu Lys Met Gly Lys Ser Val Pro
 20 25 30

His Trp Leu Pro Arg Val Thr Leu Tyr Thr Thr Leu Thr Gly Ser Phe
 35 40 45

Leu Tyr Leu Leu Arg Tyr Val Leu Val Leu Phe Leu
 50 55 60

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<210> 44
 <211> 60
 <212> PRT
 <213> Bacillus anthracis

<400> 44

Met Thr Leu Ala Gly Glu Ala Ile Ile Ile Trp Thr Ala Thr Gly Leu
 1 5 10 15

Ser Val Val Ala Met Lys Ala Ala Glu Lys Met Gly Lys Ser Val Pro
 20 25 30

His Trp Leu Pro Arg Val Thr Leu Tyr Thr Thr Leu Thr Gly Ser Phe
 35 40 45

Leu Tyr Leu Leu Arg Tyr Val Leu Val Leu Phe Leu
 50 55 60

<210> 45
 <211> 429
 <212> PRT
 <213> Bacillus anthracis

<400> 45

Met Trp Lys Leu Phe Ile Pro Tyr Val Ile Arg Ser Leu Ala Cys Met
 1 5 10 15

His Val Phe Leu Glu Thr Gly Ile Tyr Thr Leu Tyr Lys Arg Asp Ile
 20 25 30

Arg Ser Asp Phe Met Leu Glu Leu Leu Ser Val Pro Phe Ala Gly Leu
 35 40 45

Ile Phe Ala Ile Val Gly Glu Arg Leu Lys Gly Arg Glu Ser Asp Arg
 50 55 60

Lys Lys Ile Gln Val Phe Phe Glu Val Ser Gly Ile Ala Ile Arg Arg
 65 70 75 80

Glu Asp Lys Leu Gln Tyr Pro Val Phe Leu Glu Gln Lys Glu Asp Asp
 85 90 95

Arg Ser Thr Thr Tyr Ile Tyr Arg Leu Pro Val Gly Met Pro Ser Lys

Protein Data Bank (PDB) file: 1U8B

100

105

110

Ile Ile Gln Lys Val Glu Asp Val Val Ser Glu Gly Leu Ser Lys Pro
115 120 125

Val Arg Ile Asp Tyr Asp Asn Tyr Lys Leu Asn Ile Arg Val Phe His
130 135 140

Arg Asp Ile Pro Lys Lys Trp Ser Trp Ser Lys Gly Leu Val Ala Glu
145 150 155 160

Gly Ser Trp Cys Val Pro Met Gly Gln Ser Leu Glu Lys Leu Ile Tyr
165 170 175

His Asp Phe Asp Lys Thr Pro His Met Thr Leu Gly Gly Leu Thr Arg
180 185 190

Met Gly Lys Thr Val Phe Leu Lys Asn Val Val Thr Ser Leu Thr Leu
195 200 205

Ala Gln Pro Glu His Ile Asn Leu Tyr Ile Ile Asp Leu Lys Gly Gly
210 215 220

Leu Glu Phe Gly Pro Tyr Lys Asn Leu Lys Gln Val Val Ser Ile Ala
225 230 235 240

Glu Lys Pro Ala Glu Ala Phe Met Ile Leu Thr Asn Ile Leu Lys Lys
245 250 255

Met Glu Glu Lys Met Glu Tyr Met Lys Cys Arg His Tyr Thr Asn Val
260 265 270

Val Glu Thr Asn Ile Lys Glu Arg Tyr Phe Ile Ile Val Asp Glu Gly
275 280 285

Ala Glu Leu Cys Pro Asp Lys Ser Met Lys Lys Glu Gln Gln Arg Leu
290 295 300

Leu Gly Ala Cys Gln Gln Met Leu Ser His Ile Ala Arg Ile Gly Gly
305 310 315 320

Ala Leu Gly Phe Arg Leu Ile Phe Cys Thr Gln Tyr Pro Thr Gly Asp
325 330 335

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Thr Leu Pro Arg Gln Val Lys Gln Asn Ser Asp Ala Lys Leu Gly Phe
 340 345 350

Arg Leu Pro Thr Gln Thr Ala Ser Ser Val Val Ile Asp Glu Ala Gly
 355 360 365

Leu Glu Thr Ile Lys Ser Ile Pro Gly Arg Ala Ile Phe Lys Thr Asp
 370 375 380

Arg Leu Thr Glu Ile Gln Val Pro Tyr Ile Ser Asn Glu Met Met Trp
 385 390 395 400

Glu His Leu Lys Gly Tyr Glu Val Glu Lys His Glu Asp Ala Asn Ala
 405 410 415

Tyr Ala Asn Gln Pro Ser Asn Gly Asp Thr Cys Asp Asp
 420 425

<210> 46
 <211> 429
 <212> PRT
 <213> Bacillus anthracis

<400> 46

Met Trp Lys Leu Phe Ile Pro Tyr Val Ile Arg Ser Leu Ala Cys Met
 1 5 10 15

His Val Phe Leu Glu Thr Gly Ile Tyr Thr Leu Tyr Lys Arg Asp Ile
 20 25 30

Arg Ser Asp Phe Met Leu Glu Leu Leu Ser Val Pro Phe Ala Gly Leu
 35 40 45

Ile Phe Ala Ile Val Gly Glu Arg Leu Lys Gly Arg Glu Ser Asp Arg
 50 55 60

Lys Lys Ile Gln Val Phe Phe Glu Val Ser Gly Ile Ala Ile Arg Arg
 65 70 75 80

Glu Asp Lys Leu Gln Tyr Pro Val Phe Leu Glu Gln Lys Glu Asp Asp
 85 90 95

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Arg	Ser	Thr	Thr	Tyr	Ile	Tyr	Arg	Leu	Pro	Val	Gly	Met	Pro	Ser	Lys
			100					105					110		
Ile	Ile	Gln	Lys	Val	Glu	Asp	Val	Val	Ser	Glu	Gly	Leu	Ser	Lys	Pro
		115					120					125			
Val	Arg	Ile	Asp	Tyr	Asp	Asn	Tyr	Lys	Leu	Asn	Ile	Arg	Val	Phe	His
	130					135					140				
Arg	Asp	Ile	Pro	Lys	Lys	Trp	Ser	Trp	Ser	Lys	Gly	Leu	Val	Ala	Glu
145					150					155					160
Gly	Ser	Trp	Cys	Val	Pro	Met	Gly	Gln	Ser	Leu	Glu	Lys	Leu	Ile	Tyr
			165						170					175	
His	Asp	Phe	Asp	Lys	Thr	Pro	His	Met	Thr	Leu	Gly	Gly	Leu	Thr	Arg
			180					185					190		
Met	Gly	Lys	Thr	Val	Phe	Leu	Lys	Asn	Val	Val	Thr	Ser	Leu	Thr	Leu
		195					200					205			
Ala	Gln	Pro	Glu	His	Ile	Asn	Leu	Tyr	Ile	Ile	Asp	Leu	Lys	Gly	Gly
	210					215					220				
Leu	Glu	Phe	Gly	Pro	Tyr	Lys	Asn	Leu	Lys	Gln	Val	Val	Ser	Ile	Ala
225					230					235					240
Glu	Lys	Pro	Ala	Glu	Ala	Phe	Met	Ile	Leu	Thr	Asn	Ile	Leu	Lys	Lys
				245					250					255	
Met	Glu	Glu	Lys	Met	Glu	Tyr	Met	Lys	Cys	Arg	His	Tyr	Thr	Asn	Val
			260					265					270		
Val	Glu	Thr	Asn	Ile	Lys	Glu	Arg	Tyr	Phe	Ile	Ile	Val	Asp	Glu	Gly
			275				280					285			
Ala	Glu	Leu	Cys	Pro	Asp	Lys	Ser	Met	Lys	Lys	Glu	Gln	Gln	Arg	Leu
	290					295					300				
Leu	Gly	Ala	Cys	Gln	Gln	Met	Leu	Ser	His	Ile	Ala	Arg	Ile	Gly	Gly
305					310					315					320
Ala	Leu	Gly	Phe	Arg	Leu	Ile	Phe	Cys	Thr	Gln	Tyr	Pro	Thr	Gly	Asp

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325

330

335

Thr Leu Pro Arg Gln Val Lys Gln Asn Ser Asp Ala Lys Leu Gly Phe
 340 345 350

Arg Leu Pro Thr Gln Thr Ala Ser Ser Val Val Ile Asp Glu Ala Gly
 355 360 365

Leu Glu Thr Ile Lys Ser Ile Pro Gly Arg Ala Ile Phe Lys Thr Asp
 370 375 380

Arg Leu Thr Glu Ile Gln Val Pro Tyr Ile Ser Asn Glu Met Met Trp
 385 390 395 400

Glu His Leu Lys Gly Tyr Glu Val Glu Lys His Glu Asp Ala Asn Ala
 405 410 415

Tyr Ala Asn Gln Pro Ser Asn Gly Asp Thr Cys Asp Asp
 420 425

<210> 47
 <211> 210
 <212> PRT
 <213> Bacillus anthracis

<400> 47

Met Arg Trp Arg Asn Met Arg Met Gln Thr His Met Gln Ile Asn Arg
 1 5 10 15

Gln Met Ala Ile Leu Ala Thr Ile Arg Lys Leu Gln Phe Ala Thr Arg
 20 25 30

Arg His Leu Met Ser Ile His Glu Met Gly Gly Ile Arg Asn Ala Asn
 35 40 45

Arg Ile Leu Lys Asp Leu Ser Ile Tyr Thr Ser Lys Val Val Tyr Asn
 50 55 60

Lys Glu His Val Tyr Tyr Leu Asn Gln Ser Gly His Lys Leu Phe Gly
 65 70 75 80

Glu Gly Lys Val Val His His Gly Lys Val Thr His Ala Leu Leu Arg
 85 90 95

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Asn Glu Ala Trp Leu Asn Leu Tyr Cys Pro Asp Asp Trp Gln Val Glu
 100 105 110

Thr Glu Ile Lys Tyr Ile Lys Asp Asn Lys Lys Lys Lys Ile Ile Pro
 115 120 125

Asp Val Lys Phe Arg Asp Glu Asp Arg Ile Leu His Ala Val Glu Ile
 130 135 140

Asp Arg Thr Gln Lys Met Ile Val Asn Asp Glu Lys Leu Lys Lys Tyr
 145 150 155 160

Glu Glu Leu Thr Gln Ile Tyr Lys Gln Lys His Asn Gly Lys Val Pro
 165 170 175

Val Ile His Phe Phe Thr Ile Thr Lys Tyr Arg Glu Lys Lys Leu Glu
 180 185 190

Glu Leu Ala Asn Lys Tyr Asn Val Phe Val Lys Val Tyr Val Ile Ala
 195 200 205

Thr Thr
 210

<210> 48
 <211> 210
 <212> PRT
 <213> Bacillus anthracis

<400> 48

Met Arg Trp Arg Asn Met Arg Met Gln Thr His Met Gln Ile Asn Arg
 1 5 10 15

Gln Met Ala Ile Leu Ala Thr Ile Arg Lys Leu Gln Phe Ala Thr Arg
 20 25 30

Arg His Leu Met Ser Ile His Glu Met Gly Gly Ile Arg Asn Ala Asn
 35 40 45

Arg Ile Leu Lys Asp Leu Ser Ile Tyr Thr Ser Lys Val Val Tyr Asn
 50 55 60

Lys Glu His Val Tyr Tyr Leu Asn Gln Ser Gly His Lys Leu Phe Gly

65

70

75

80

Glu Gly Lys Val Val His His Gly Lys Val Thr His Ala Leu Leu Arg
85 90 95

Asn Glu Ala Trp Leu Asn Leu Tyr Cys Pro Asp Asp Trp Gln Val Glu
100 105 110

Thr Glu Ile Lys Tyr Ile Lys Asp Asn Lys Lys Lys Lys Ile Ile Pro
115 120 125

Asp Val Lys Phe Arg Asp Glu Asp Arg Ile Leu His Ala Val Glu Ile
130 135 140

Asp Arg Thr Gln Lys Met Ile Val Asn Asp Glu Lys Leu Lys Lys Tyr
145 150 155 160

Glu Glu Leu Thr Gln Ile Tyr Lys Gln Lys His Asn Gly Lys Val Pro
165 170 175

Val Ile His Phe Phe Thr Ile Thr Lys Tyr Arg Glu Lys Lys Leu Glu
180 185 190

Glu Leu Ala Asn Lys Tyr Asn Val Phe Val Lys Val Tyr Val Ile Ala
195 200 205

Thr Thr
210

<210> 49
<211> 78
<212> PRT
<213> Bacillus anthracis

<400> 49

Met Lys Phe Thr Leu Gly Asn Ser Leu Asp Glu Leu Gly Ile Thr Lys
1 5 10 15

Asn Lys Leu Ser Thr Glu Ser Gln Val Arg Tyr Asn Thr Ile Ser Asp
20 25 30

Leu Val Asn Gly Asn Ala Asn Ala Val Arg Phe Asp Ser Leu Glu Ala
35 40 45

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Ile Ile Asp Ala Leu Asn Ala Ile Ala Ala Glu Lys Gly Ile Asn Lys
 50 55 60

Ile Tyr Lys Ile Asp Asp Val Ile Gln Tyr Ile Lys Lys Ser
 65 70 75

<210> 50

<211> 78

<212> PRT

<213> Bacillus anthracis

<400> 50

Met Lys Phe Thr Leu Gly Asn Ser Leu Asp Glu Leu Gly Ile Thr Lys
 1 5 10 15

Asn Lys Leu Ser Thr Glu Ser Gln Val Arg Tyr Asn Thr Ile Ser Asp
 20 25 30

Leu Val Asn Gly Asn Ala Asn Ala Val Arg Phe Asp Ser Leu Glu Ala
 35 40 45

Ile Ile Asp Ala Leu Asn Ala Ile Ala Ala Glu Lys Gly Ile Asn Lys
 50 55 60

Ile Tyr Lys Ile Asp Asp Val Ile Gln Tyr Ile Lys Lys Ser
 65 70 75

<210> 51

<211> 75

<212> PRT

<213> Bacillus anthracis

<400> 51

Met Ala Phe Lys Ala Ser Met Ile Ala Ser Ser Glu Ser Lys Arg Thr
 1 5 10 15

Ala Leu Ala Leu Pro Phe Thr Lys Ser Leu Ile Val Leu Tyr Leu Thr
 20 25 30

Trp Asp Ser Val Asp Asn Leu Phe Leu Val Ile Pro Asn Ser Ser Lys
 35 40 45

Glu Phe Pro Ser Val Asn Phe Ile Leu Phe Ser Ser Ala Ala Leu Val
 50 55 60

Ille Leu Tyr Ser Phe Tyr Asn Ile Asn Arg Asn

65 70 75

<210> 52

<211> 78

<212> PRT

<213> Bacillus anthracis

<400> 52

Met Lys Phe Thr Leu Gly Asn Ser Leu Asp Glu Leu Gly Ile Thr Lys
1 5 10 15

Asn Lys Leu Ser Thr Glu Ser Gln Val Arg Tyr Asn Thr Ile Ser Asp
20 25 30

Leu Val Asn Gly Asn Ala Asn Ala Val Arg Phe Asp Ser Leu Glu Ala
35 40 45

Ile Ile Asp Ala Leu Asn Ala Ile Ala Ala Glu Lys Gly Ile Asn Lys
50 55 60

Ile Tyr Lys Ile Asp Asp Val Ile Gln Tyr Ile Lys Lys Ser
65 70 75

<210> 53

<211> 287

<212> PRT

<213> Bacillus anthracis

<400> 53

Met Leu Ser Ser Ala Asn Tyr Thr Gln Tyr Lys Lys Leu Gln Ser Phe
1 5 10 15

Arg Ser Val Glu Glu Met Asn Glu Ala Ile Cys Ser Phe Leu Tyr Lys
20 25 30

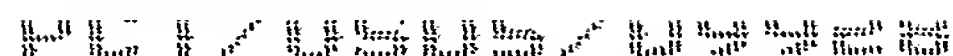
His Thr His Glu Leu Ser Glu Ser Ala Ile Lys Val Leu Lys Phe Leu
35 40 45

Ala Arg His Ser Cys Lys Ile Pro Gly Val Ser Phe Leu Lys Val Gly
50 55 60

Thr Ile Ala Glu Ala Leu Asn Ile Ser Asp Arg Thr Val Arg Arg Val

65 70 75 80
 85 90 95 100 105 110 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200 205 210 215 220 225 230 235 240 245 250 255 260 265 270 275 280 285

Leu Lys Val Leu Glu Asp Phe Glu Val Val Thr Arg His Lys Thr Ile
 Arg Thr Glu Gly Lys Leu Arg Gly Gly Asn Gly His Asn Val Tyr Val
 Leu Leu Lys Lys Tyr Ser Val Thr Pro Asn Val Leu Pro Lys Met Ser
 Gln Arg Gln Asp Glu Glu Asn Leu Thr Glu Ser Lys Val Ser Asp Thr
 Lys Thr Asp Lys Glu Ala Lys Leu Ser Glu Ser His Pro Leu Glu Glu
 Leu Lys Ser Glu Leu Asn Val Lys Glu Thr Ser Ala Arg Glu Ser Lys
 Glu Ile Glu Leu Glu Asp Leu Asp Glu Thr Phe Thr Pro Glu Asn Val
 Pro Ser Gln Phe Arg Asp Val Val Ala Pro Phe Phe Lys Ser Ala Asp
 Lys Ile Tyr Lys Leu Tyr His Arg Val Leu Ile Ala Tyr Lys Arg Ser
 Lys Ile Asp Lys Pro Ile Glu Gln Val Ile Asn Gln Ala Ile Gln Ala
 Phe Lys Glu Thr Val Phe Ala Glu Lys Ala Asn Lys Ile Arg Ser Thr
 Phe Glu Gly Tyr Phe Tyr Arg Ile Val Glu Ser Lys Phe Val Met Glu
 Arg Arg Lys Glu Cys Arg Gly Leu Leu Phe Asp Trp Leu Asn Glu
 <210> 54
 <211> 287



<212> PRT

<213> Bacillus anthracis

<400> 54

Met Leu Ser Ser Ala Asn Tyr Thr Gln Tyr Lys Lys Leu Gln Ser Phe
1 5 10 15

Arg Ser Val Glu Glu Met Asn Glu Ala Ile Cys Ser Phe Leu Tyr Lys
20 25 30

His Thr His Glu Leu Ser Glu Ser Ala Ile Lys Val Leu Lys Phe Leu
35 40 45

Ala Arg His Ser Cys Lys Ile Pro Gly Val Ser Phe Leu Lys Val Gly
50 55 60

Thr Ile Ala Glu Ala Leu Asn Ile Ser Asp Arg Thr Val Arg Arg Val
65 70 75 80

Leu Lys Val Leu Glu Asp Phe Glu Val Val Thr Arg His Lys Thr Ile
85 90 95

Arg Thr Glu Gly Lys Leu Arg Gly Gly Asn Gly His Asn Val Tyr Val
100 105 110

Leu Leu Lys Lys Tyr Ser Val Thr Pro Asn Val Leu Pro Lys Met Ser
115 120 125

Gln Arg Gln Asp Glu Glu Asn Leu Thr Glu Ser Lys Val Ser Asp Thr
130 135 140

Lys Thr Asp Lys Glu Ala Lys Leu Ser Glu Ser His Pro Leu Glu Glu
145 150 155 160

Leu Lys Ser Glu Leu Asn Val Lys Glu Thr Ser Ala Arg Glu Ser Lys
165 170 175

Glu Ile Glu Leu Glu Asp Leu Asp Glu Thr Phe Thr Pro Glu Asn Val
180 185 190

Pro Ser Gln Phe Arg Asp Val Val Ala Pro Phe Phe Lys Ser Ala Asp
195 200 205

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Lys Ile Tyr Lys Leu Tyr His Arg Val Leu Ile Ala Tyr Lys Arg Ser
 210 215 220

Lys Ile Asp Lys Pro Ile Glu Gln Val Ile Asn Gln Ala Ile Gln Ala
 225 230 235 240

Phe Lys Glu Thr Val Phe Ala Glu Lys Ala Asn Lys Ile Arg Ser Thr
 245 250 255

Phe Glu Gly Tyr Phe Tyr Arg Ile Val Glu Ser Lys Phe Val Met Glu
 260 265 270

Arg Arg Lys Glu Cys Arg Gly Leu Leu Phe Asp Trp Leu Asn Glu
 275 280 285

<210> 55
 <211> 481
 <212> PRT
 <213> Bacillus anthracis

<400> 55

Leu Lys Tyr Ala Val Tyr Val Arg Val Ser Thr Asp Arg Asp Glu Gln
 1 5 10 15

Val Ser Ser Val Glu Asn Gln Ile Asp Ile Cys Arg Tyr Trp Leu Glu
 20 25 30

Lys Asn Gly Tyr Glu Trp Asp Pro Asn Ala Val Tyr Phe Asp Asp Gly
 35 40 45

Ile Ser Gly Thr Ala Trp Leu Glu Arg His Ala Met Gln Leu Ile Leu
 50 55 60

Glu Lys Ala Arg Arg Asn Glu Leu Asp Thr Val Val Phe Lys Ser Ile
 65 70 75 80

His Arg Leu Ala Arg Asp Leu Arg Asp Ala Leu Glu Ile Lys Glu Ile
 85 90 95

Leu Ile Gly His Gly Ile Arg Leu Val Thr Ile Glu Glu Asn Tyr Asp
 100 105 110

Ser Leu Tyr Glu Gly Gly Asn Asp Ile Lys Phe Glu Met Phe Ala Met
 115 120 125

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Phe Ala Ala Gln Leu Pro Lys Thr Ile Ser Val Ser Val Ser Ala Ala
 130 135 140

Met Gln Ala Lys Ala Arg Arg Gly Glu Phe Ile Gly Lys Pro Gly Leu
 145 150 155 160

Gly Tyr Asp Val Ile Asp Lys Lys Leu Val Ile Asn Glu Lys Glu Ala
 165 170 175

Glu Ile Val Arg Glu Ile Phe Asp Leu Ser Tyr Lys Gly Tyr Gly Phe
 180 185 190

Lys Lys Ile Ala Asn Ile Leu Asn Asp Lys Gly Thr Tyr Thr Lys Phe
 195 200 205

Gly Gln Leu Trp Ser His Thr Thr Val Gly Lys Ile Leu Lys Asn Gln
 210 215 220

Thr Tyr Lys Gly Asn Leu Val Leu Asn Ser Tyr Lys Thr Val Lys Val
 225 230 235 240

Asp Gly Lys Lys Lys Arg Val Tyr Thr Pro Lys Glu Arg Leu Thr Ile
 245 250 255

Ile Glu Asp His Tyr Pro Thr Ile Val Ser Lys Glu Leu Trp Asn Ala
 260 265 270

Val Asn Ser Asp Arg Ala Ser Lys Lys Lys Thr Lys Gln Asp Thr Arg
 275 280 285

Asn Glu Phe Arg Gly Met Met Phe Cys Lys His Cys Gly Glu Pro Ile
 290 295 300

Thr Ala Lys Tyr Ser Gly Arg Tyr Ala Lys Gly Ser Lys Lys Glu Trp
 305 310 315 320

Val Tyr Met Lys Cys Ser Asn Tyr Ile Arg Phe Asn Arg Cys Val Asn
 325 330 335

Phe Asp Pro Ala His Tyr Asp Asp Ile Arg Glu Ala Ile Ile Tyr Gly
 340 345 350

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Leu Lys Gln Gln Glu Lys Glu Leu Glu Ile His Phe Asn Pro Lys Met
 355 360 365

His Gln Lys Arg Asn Asp Lys Ser Thr Glu Ile Lys Lys Gln Ile Lys
 370 375 380

Leu Leu Lys Val Lys Lys Glu Lys Leu Ile Asp Leu Tyr Val Glu Gly
 385 390 395 400

Leu Ile Asp Lys Glu Met Phe Ser Lys Arg Asp Leu Asn Phe Glu Asn
 405 410 415

Glu Ile Lys Glu Gln Glu Leu Ala Leu Leu Lys Leu Thr Asp Gln Asn
 420 425 430

Lys Arg Asn Lys Glu Glu Lys Lys Ile Lys Glu Ala Phe Ser Met Leu
 435 440 445

Asp Glu Glu Lys Asp Met His Glu Val Phe Lys Thr Leu Ile Lys Lys
 450 455 460

Ile Thr Leu Ser Lys Asp Lys Tyr Ile Asp Ile Glu Tyr Thr Phe Ser
 465 470 475 480

Leu

<210> 56
 <211> 481
 <212> PRT
 <213> Bacillus anthracis

<400> 56

Leu Lys Tyr Ala Val Tyr Val Arg Val Ser Thr Asp Arg Asp Glu Gln
 1 5 10 15

Val Ser Ser Val Glu Asn Gln Ile Asp Ile Cys Arg Tyr Trp Leu Glu
 20 25 30

Lys Asn Gly Tyr Glu Trp Asp Pro Asn Ala Val Tyr Phe Asp Asp Gly
 35 40 45

Ile Ser Gly Thr Ala Trp Leu Glu Arg His Ala Met Gln Leu Ile Leu

Protein Data Bank (PDB) Entry: 1G8B (Human IL-12B)

50

55

60

Glu Lys Ala Arg Arg Asn Glu Leu Asp Thr Val Val Phe Lys Ser Ile
65 70 75 80

His Arg Leu Ala Arg Asp Leu Arg Asp Ala Leu Glu Ile Lys Glu Ile
85 90 95

Leu Ile Gly His Gly Ile Arg Leu Val Thr Ile Glu Glu Asn Tyr Asp
100 105 110

Ser Leu Tyr Glu Gly Gly Asn Asp Ile Lys Phe Glu Met Phe Ala Met
115 120 125

Phe Ala Ala Gln Leu Pro Lys Thr Ile Ser Val Ser Val Ser Ala Ala
130 135 140

Met Gln Ala Lys Ala Arg Arg Gly Glu Phe Ile Gly Lys Pro Gly Leu
145 150 155 160

Gly Tyr Asp Val Ile Asp Lys Lys Leu Val Ile Asn Glu Lys Glu Ala
165 170 175

Glu Ile Val Arg Glu Ile Phe Asp Leu Ser Tyr Lys Gly Tyr Gly Phe
180 185 190

Lys Lys Ile Ala Asn Ile Leu Asn Asp Lys Gly Thr Tyr Thr Lys Phe
195 200 205

Gly Gln Leu Trp Ser His Thr Thr Val Gly Lys Ile Leu Lys Asn Gln
210 215 220

Thr Tyr Lys Gly Asn Leu Val Leu Asn Ser Tyr Lys Thr Val Lys Val
225 230 235 240

Asp Gly Lys Lys Lys Arg Val Tyr Thr Pro Lys Glu Arg Leu Thr Ile
245 250 255

Ile Glu Asp His Tyr Pro Thr Ile Val Ser Lys Glu Leu Trp Asn Ala
260 265 270

Val Asn Ser Asp Arg Ala Ser Lys Lys Lys Thr Lys Gln Asp Thr Arg
275 280 285

$\langle 210 \rangle$	57
$\langle 211 \rangle$	42
$\langle 212 \rangle$	PRT

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<213> Bacillus anthracis

<400> 57

Val Ile Ile Val Glu Phe Lys Asp Arg Leu Arg Gln Leu Arg Arg Glu
 1 5 10 15

Arg Asn Leu Thr Gln His Asp Leu Gly Gln Ala Ile Gly Val Thr Ala
 20 25 30

Gly Ser Ile Thr Val Thr Asn Asn Gln Leu
 35 40

<210> 58

<211> 444

<212> PRT

<213> Bacillus anthracis

<400> 58

Met Arg Ile Ala Leu Tyr Arg Thr His Ala Leu Ile Asn Val Ile Lys
 1 5 10 15

Tyr Ser Val Asn Ile Met Glu Lys Val Leu Leu Ile Glu Met Lys Gly
 20 25 30

Val Ser Tyr Leu Lys Phe His Glu Lys Ile Met Gly Met Ile Glu Asp
 35 40 45

Arg Asp Asp Leu Thr Ala Thr Ser Val Ala Cys Lys Ile Gly Val Ser
 50 55 60

Lys Gln Tyr Met Ser Lys Phe Lys Arg Gln Gly Thr Ile Gly Phe Ser
 65 70 75 80

Gln Leu Leu Lys Leu Ala Pro Ile Leu Ser Val Glu Gly Lys Lys Ala
 85 90 95

Lys Gln Thr Met Ser Asp Trp Cys Leu Glu Leu Asp Thr Thr Glu Ser
 100 105 110

Ile Lys Gln Ser Phe Glu Tyr Ala Cys Leu Thr Arg Asn Thr Ile Leu
 115 120 125

Leu Lys Gln Leu Ile Gln Lys His Ser Lys Glu Thr Gly Thr Ile Arg
 130 135 140

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Glu Tyr Val Glu Val Tyr Thr Ile Leu Phe Lys Tyr Ile Lys Asn Ile
 145 150 155 160

Ile Lys Gly Ser Glu Ile Thr Lys Glu Leu Lys Lys Ile Gly Ala Ile
 165 170 175

Lys Asp Lys Val Leu Glu Ile Leu Thr Lys Ile Met Glu Cys Tyr Glu
 180 185 190

Tyr Tyr His Leu Lys Lys Phe Asn Leu Met Leu Glu Thr Ala Glu Thr
 195 200 205

Ile Asp Ser Leu Val Arg Glu Ile Glu Gly Glu Arg Lys Ser Phe Ile
 210 215 220

Lys Glu Cys Tyr Asn Tyr Arg Ile Ala Glu Leu Phe Ala Pro Ile Phe
 225 230 235 240

Leu Gln Lys Asn Asn Val Asp Leu Ala Arg Lys Tyr Ala His Phe Leu
 245 250 255

Ile His Ala Asn Val Cys Thr Lys Thr Val Ser Asp Ala Tyr Tyr Ile
 260 265 270

Leu Gly Met Ser Asn Val Leu Glu Ser Lys Glu Gln Cys Leu Phe Asn
 275 280 285

Leu Lys Lys Ser Tyr Leu Leu Ser Lys Glu Ile Arg Asp Ala Asp Ile
 290 295 300

Glu Gln Glu Ala Arg Tyr Asn Leu Asp Val Ala Lys Ile Tyr Phe Gly
 305 310 315 320

Val Lys Leu Asp Glu Asp Ala Asp Ser Arg Leu Leu Leu Tyr Gln Lys
 325 330 335

Asn Pro Thr Cys Glu Leu Ser Ile Ile Ala Leu Gln Asp Ile Ile Arg
 340 345 350

Asp Arg Gly Asp Lys Asp Phe Leu Asn Tyr Phe Ile Ala Cys Ser Ser
 355 360 365

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Asp Glu Ile Glu Cys Leu Tyr Asp Leu Phe Tyr Gln Tyr Phe Tyr Gln
370 375 380

Ala Asn Tyr Leu Phe Ser Ala Ile Val Ala Lys Glu Leu Cys Asn Arg
385 390 395 400

Gly Asp Lys Ser Leu Leu Thr Gln Ser Met Val Asn Leu Gly Asn Glu
405 410 415

Lys Gln Lys Gly Val Val Asp Ile Glu Glu Ile Ser Ile Ser Ser Leu
420 425 430

Tyr Ile Ile Asn Gly Ser Asn Ser Gly Ile Val Val
435 440

<210> 59
<211> 75
<212> PRT
<213> Bacillus anthracis

<400> 59

Met Lys Val Ile Lys Asp Glu Thr Lys Leu Lys Ala Ala Phe Lys Lys
1 5 10 15

Ser Gly Tyr Lys Tyr Gln Glu Leu Ala Asp Glu Leu Glu Ile Ser Cys
20 25 30

Ser Tyr Cys Tyr Lys Leu Ile Asn Asn His Asn Tyr Lys Lys Lys Ile
35 40 45

Ser Tyr Asn Leu Ala Ser Arg Met Ala His Val Leu Asn Ala Ser Val
50 55 60

Val Asp Leu Phe Glu Glu Gln Val Asp Phe Phe
65 70 75

<210> 60
<211> 118
<212> PRT
<213> Bacillus anthracis

<400> 60

Val Ile Ile Val Glu Phe Lys Asp Arg Leu Arg Gln Leu Arg Arg Glu
1 5 10 15

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Arg Asn Leu Thr Gln His Asp Leu Gly Gln Ala Ile Gly Val Thr Ala
 20 25 30

Gly Ser Val Ser Lys Phe Glu Thr Gly Phe Lys Pro Ala Ser Arg Glu
 35 40 45

Thr Val Glu Arg Ala Ala Asp Phe Leu Gly Val Pro Val Asp Tyr Leu
 50 55 60

Leu Gly Arg Ser Asp Ser Arg Glu Leu Asp Ala Asp Met Asn Gln Lys
 65 70 75 80

Tyr Leu His Ile Lys Asn Arg Leu Glu Gln Leu Pro Glu Glu His Gln
 85 90 95

Glu Ile Val Leu Gln Asn Met Leu Thr Met Met Glu Ser Leu Glu Lys
 100 105 110

Leu Lys Ser Thr Ser Lys
 115

<210> 61
 <211> 61
 <212> PRT
 <213> Bacillus anthracis

<400> 61

Met Arg Glu His Arg Gly Glu Arg Ala Met Ser Glu Ile Tyr Tyr Lys
 1 5 10 15

Gly Phe Ile Ile Lys Glu Thr Tyr Gly Glu Arg Asn Ile Glu Glu Val
 20 25 30

Phe Lys Glu Ala Tyr Glu Ser Phe Tyr Gly Val Glu Val Lys Val Val
 35 40 45

Lys Lys Glu Leu Gly Thr Lys Arg Asn Ser Ala Ala Ser
 50 55 60

<210> 62
 <211> 75
 <212> PRT
 <213> Bacillus anthracis

~~PCT/US2005/009928~~

<400> 62

Met Lys Val Ile Lys Asp Glu Thr Lys Leu Lys Ala Ala Phe Lys Lys
 1 5 10 15

Ser Gly Tyr Lys Tyr Gln Glu Leu Ala Asp Glu Leu Glu Ile Ser Cys
 20 25 30

Ser Tyr Cys Tyr Lys Leu Ile Asn Asn His Asn Tyr Lys Lys Lys Ile
 35 40 45

Ser Tyr Asn Leu Ala Ser Arg Met Ala His Val Leu Asn Ala Ser Val
 50 55 60

Val Asp Leu Phe Glu Glu Gln Val Asp Phe Phe
 65 70 75

.

<210> 63

<211> 271

<212> PRT

<213> Bacillus anthracis

<400> 63

Met Asp Gln Leu Thr Val Ala Ser Glu Leu Arg Leu Leu Gly Arg Arg
 1 5 10 15

Lys Val Ala Gly Tyr Glu Phe Thr Gly Ile Glu Gly Gly Phe Gly Glu
 20 25 30

Gly Lys Lys Ala Met Leu Val Leu Asp Ile Ala Thr Ile His Asn Gln
 35 40 45

Pro Leu Lys Glu Ile Asn Arg Arg Ile Asn Asp Asn Arg Ile Arg Phe
 50 55 60

Lys Asp Gly Val Asp Ile Val Asp Leu Lys Ser Gly Gly Phe Asn Pro
 65 70 75 80

Pro Gln Leu Leu Asn Leu Gly Phe Ser Asn Met Gln Ile Ala Lys Ser
 85 90 95

Asn Asn Ile Tyr Leu Leu Ser Glu Arg Gly Tyr Ala Lys Leu Leu Lys
 100 105 110

Ille Leu Glu Asp Asp Lys Ala Trp Glu Leu Tyr Asp Ile Leu Val Asp

115 120 125

Glu Tyr Phe Asn Met Arg Glu Lys Asn Gln Val Ala Thr Asp Pro Met
130 135 140

Ser Ile Leu Lys Leu Thr Phe Glu Ala Leu Glu Gly Gln Gln Gln Ala
145 150 155 160

Ile Glu Glu Ile Lys Ser Asp Val Gln Asp Leu Arg Glu Asn Thr Pro
165 170 175

Leu Phe Ala Ile Glu Cys Asp Glu Ile Ser Thr Ala Val Lys Arg Gln
180 185 190

Gly Val Ile Leu Leu Gly Gly Lys Gln Ser Asn Ala Tyr Arg Asn Arg
195 200 205

Gly Leu Arg Gly Lys Val Tyr Arg Asp Ile Tyr Asn Gln Leu Tyr Arg
210 215 220

Glu Phe Gly Val Lys Ser His Lys Ala Ile Lys Arg Cys His Leu Asn
225 230 235 240

Val Ala Val Lys Ile Val Glu Glu Tyr Thr Leu Pro Ile Val Leu Ser
245 250 255

Glu Glu Ile Ser Phe Val Asn Ala Gln Met Asp Phe Thr Glu Met
260 265 270

<210> 64
<211> 61
<212> PRT
<213> Bacillus anthracis

<400> 64

Met Arg Glu His Arg Gly Glu Arg Ala Met Ser Glu Ile Tyr Tyr Lys
1 5 10 15

Gly Phe Ile Ile Lys Glu Thr Tyr Gly Glu Arg Asn Ile Glu Glu Val
20 25 30

Phe Lys Glu Ala Tyr Glu Ser Phe Tyr Gly Val Glu Val Lys Val Val

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35

40

45

Lys Lys Glu Leu Gly Thr Lys Arg Asn Ser Ala Ala Ser
 50 55 60

<210> 65

<211> 217

<212> PRT

<213> Bacillus anthracis

<400> 65

Met Asp Gln Leu Arg Val Ile Glu Gly Glu Lys Val Asp Lys Pro Asp
 1 5 10 15

Tyr Val Glu Ile Tyr Leu Gly Ala Phe Met Asn Ala Val Asn Glu Leu
 20 25 30

Lys Lys Gln Asp Glu Glu Thr Arg Ser Leu Ser Lys Asp Thr Tyr Lys
 35 40 45

Lys Ala Ile Phe Tyr Gly Val Arg Tyr Ile Ser Ile Ser Lys Asn Asp
 50 55 60

Ser Leu Asn Tyr Asp Tyr Leu Met Asn Arg Phe Leu Leu Ile Ser Tyr
 65 70 75 80

Leu Glu Asn Leu Met Lys Val Leu Thr Pro Arg Asp Phe Met Thr Ile
 85 90 95

Phe Pro Ile Asp Lys Asn Tyr Asp Gly Ala Arg Tyr Glu Met Lys Asp
 100 105 110

Tyr Phe Phe Thr Met Asn Glu Ile Lys Lys Ile Gly Met Asp Thr Pro
 115 120 125

Ile Gly Glu Lys Ile Met Glu Phe Leu Trp Asp Tyr Gln Asn Phe Lys
 130 135 140

Asp Ile Thr Leu Phe Asn Leu Ala Ser Val Ser Ile Leu Asn Lys Leu
 145 150 155 160

Gln Lys Met Gln Gly Lys Lys Thr Leu Thr Glu Glu Phe Ala Glu Arg
 165 170 175

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Leu Gly Ile Asp Thr Tyr Thr Lys His Lys Glu Lys Gly Gly Lys Glu
 180 185 190

Tyr Ile Thr Asn Asp Arg Thr Gly Glu Ile Gln Glu Val Lys Lys Ser
 195 200 205

Arg Pro Arg Tyr Leu Lys Pro Val Gln
 210 215

<210> 66
 <211> 271
 <212> PRT
 <213> Bacillus anthracis

<400> 66

Met Asp Gln Leu Thr Val Ala Ser Glu Leu Arg Leu Leu Gly Arg Arg
 1 5 10 15

Lys Val Ala Gly Tyr Glu Phe Thr Gly Ile Glu Gly Gly Phe Gly Glu
 20 25 30

Gly Lys Lys Ala Met Leu Val Leu Asp Ile Ala Thr Ile His Asn Gln
 35 40 45

Pro Leu Lys Glu Ile Asn Arg Arg Ile Asn Asp Asn Arg Ile Arg Phe
 50 55 60

Lys Asp Gly Val Asp Ile Val Asp Leu Lys Ser Gly Gly Phe Asn Pro
 65 70 75 80

Pro Gln Leu Leu Asn Leu Gly Phe Ser Asn Met Gln Ile Ala Lys Ser
 85 90 95

Asn Asn Ile Tyr Leu Leu Ser Glu Arg Gly Tyr Ala Lys Leu Leu Lys
 100 105 110

Ile Leu Glu Asp Asp Lys Ala Trp Glu Leu Tyr Asp Ile Leu Val Asp
 115 120 125

Glu Tyr Phe Asn Met Arg Glu Lys Asn Gln Val Ala Thr Asp Pro Met
 130 135 140

Ser Ile Leu Lys Leu Thr Phe Glu Ala Leu Glu Gly Gln Gln Gln Ala

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Leu Thr Arg Glu Ile Ala Ile Lys Asn Trp Gly Lys Tyr Asn Leu Asn
 85 90 95

Arg Gly Gly Lys Pro Ile Glu Asp Cys Leu Lys Arg Glu Ile Asp Lys
 100 105 110

Val Lys Asp Leu Ser Leu Ile Lys Phe Ile Leu Glu His Thr Asp His
 115 120 125

Ala Ala Leu Lys Arg Lys Ile Asn Leu Tyr Ala Gly Phe Asp Asp Thr
 130 135 140

Ser His Asp Thr Leu Ala Ile Arg Asp Gln Glu Glu Glu Lys Glu Gln
 145 150 155 160

Lys Lys Glu Gln Lys Glu Glu Gln Glu Glu Lys Glu Lys Glu Lys Glu
 165 170 175

Lys Gln Lys Glu Glu Glu Lys Glu Pro Glu Glu Glu Lys Thr Arg Ile
 180 185 190

Lys Ser Lys Ala Ser Leu Lys Ser Asp Ala Lys Ser Asn Pro Ile Pro
 195 200 205

Tyr Lys Asp Ile Leu Asp Tyr Leu Asn Glu Lys Ala Asn Lys Asn Phe
 210 215 220

Asn Pro Lys Ala Glu Gly His Arg Lys Leu Ile Arg Ala Arg Trp Asn
 225 230 235 240

Glu Gly Tyr Lys Leu Glu Asp Phe Lys Lys Val Ile Asp Asn Lys Thr
 245 250 255

Thr Gln Trp Phe Gly Lys Lys Ser Phe Asp Gly Lys Pro Leu Asp Gln
 260 265 270

Phe Leu Arg Pro Ser Thr Leu Phe Ala Gln Lys His Phe Asp Asn Tyr
 275 280 285

Leu Asn Glu Thr Val Asn Ile Ser Asn Gln Gln His Gly Asp Gln Ile
 290 295 300

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Val Ile Pro Gly Phe Arg Gly Glu Met Pro Phe
 305 310 315

<210> 68
 <211> 217
 <212> PRT
 <213> Bacillus anthracis

<400> 68

Met Asp Gln Leu Arg Val Ile Glu Gly Glu Lys Val Asp Lys Pro Asp
 1 5 10 15

Tyr Val Glu Ile Tyr Leu Gly Ala Phe Met Asn Ala Val Asn Glu Leu
 20 25 30

Lys Lys Gln Asp Glu Glu Thr Arg Ser Leu Ser Lys Asp Thr Tyr Lys
 35 40 45

Lys Ala Ile Phe Tyr Gly Val Arg Tyr Ile Ser Ile Ser Lys Asn Asp
 50 55 60

Ser Leu Asn Tyr Asp Tyr Leu Met Asn Arg Phe Leu Leu Ile Ser Tyr
 65 70 75 80

Leu Glu Asn Leu Met Lys Val Leu Thr Pro Arg Asp Phe Met Thr Ile
 85 90 95

Phe Pro Ile Asp Lys Asn Tyr Asp Gly Ala Arg Tyr Glu Met Lys Asp
 100 105 110

Tyr Phe Phe Thr Met Asn Glu Ile Lys Lys Ile Gly Met Asp Thr Pro
 115 120 125

Ile Gly Glu Lys Ile Met Glu Phe Leu Trp Asp Tyr Gln Asn Phe Lys
 130 135 140

Asp Ile Thr Leu Phe Asn Leu Ala Ser Val Ser Ile Leu Asn Lys Leu
 145 150 155 160

Gln Lys Met Gln Gly Lys Lys Thr Leu Thr Glu Glu Phe Ala Glu Arg
 165 170 175

Leu Gly Ile Asp Thr Tyr Thr Lys His Lys Glu Lys Gly Gly Lys Glu
 180 185 190

The amino acid sequence of the protein is as follows:

Tyr Ile Thr Asn Asp Arg Thr Gly Glu Ile Gln Glu Val Lys Lys Ser
 195 200 205

Arg Pro Arg Tyr Leu Lys Pro Val Gln
 210 215

<210> 69

<211> 303

<212> PRT

<213> Bacillus anthracis

<400> 69

Val Lys Lys Ile Gln Asp Ser Phe Glu Lys Leu Thr Lys Leu Lys Phe
 1 5 10 15

Ala Asp Glu Gln Cys Asp Lys His Thr Phe Asn Lys His Gly Lys Glu
 20 25 30

Val Ile Lys Leu Val Arg Lys Met Ile Asp Asp Ala Gly Thr Val Tyr
 35 40 45

Cys Pro Arg Cys Met Val Glu Glu Gln Asn Ser Val Leu Phe Gln Gln
 50 55 60

Ala Asn Asn His Tyr Lys Lys Ile Asn Arg Glu Arg Lys Lys Asn Val
 65 70 75 80

Leu Phe Gln His Ser Ile Ile Glu Asn Gln Ser Ile Thr Glu Ser Arg
 85 90 95

Leu Ser Thr Tyr Lys Thr Asp Cys Gln Glu Thr Lys Glu Asn Lys Glu
 100 105 110

Lys Ala Ile Lys Ile Leu Glu Arg Ile Lys Asn Gly Glu Phe Leu Asn
 115 120 125

Val Tyr Ile Ala Gly Ile Gln Gly Val Gly Lys Ser His Leu Ala Tyr
 130 135 140

Ala Met Leu Tyr Glu Leu Val Lys His Tyr Trp Val Ile Ser Asp Gly
 145 150 155 160

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Glu Lys Leu Asn Asp Glu His Ala Phe Lys Asn Met Lys Ser Cys Leu
 165 170 175

Phe Val Glu Ile Glu Lys Leu Ile Arg Leu Ile Gln His Ser Phe Arg
 180 185 190

Asn Ile Glu Ser Lys Tyr Thr Met Asp Tyr Cys Ile Ser Leu Met Val
 195 200 205

Asp Val Asp Phe Leu Val Ile Asp Asp Leu Gly Ala Glu Ser Gly Ser
 210 215 220

Met Asn Arg Asn Gly Glu Ala Ser Asp Phe Val His Lys Ile Leu Tyr
 225 230 235 240

Gly Val Thr Asn Gly Arg Gln Gly Ala Asn Lys Thr Thr Ile Thr Thr
 245 250 255

Ser Asn Leu Ser Ser Ala Gln Leu Phe Gln Lys Tyr Asp Pro Lys Leu
 260 265 270

Ala Ser Arg Leu Leu Asn Gly Val Ser Lys Asp Glu Thr Ile Val Phe
 275 280 285

Lys Thr Thr Thr Asp Lys Arg Ile Val Asn Leu Asp Ile Gly Phe
 290 295 300

<210> 70
 <211> 315
 <212> PRT
 <213> Bacillus anthracis

<400> 70

Met Ala Leu Phe Arg Lys Val His Thr Glu Phe Trp Thr Asp Val Lys
 1 5 10 15

Val Ser Glu Asp Met Thr Pro Glu Asp Lys Leu Phe Met Val Tyr Leu
 20 25 30

Leu Thr Asn Pro His Thr Thr Gln Leu Gly Val Tyr Glu Ile Thr Pro
 35 40 45

Lys Met Ile Ala Phe Glu Ile Gly Leu Ser Ile Glu Ser Ala Arg Ala
 50 55 60

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Leu Leu Glu Arg Phe Glu Asn His His Lys Leu Ile Lys Tyr Asn Lys
 65 70 75 80

Leu Thr Arg Glu Ile Ala Ile Lys Asn Trp Gly Lys Tyr Asn Leu Asn
 85 90 95

Arg Gly Gly Lys Pro Ile Glu Asp Cys Leu Lys Arg Glu Ile Asp Lys
 100 105 110

Val Lys Asp Leu Ser Leu Ile Lys Phe Ile Leu Glu His Thr Asp His
 115 120 125

Ala Ala Leu Lys Arg Lys Ile Asn Leu Tyr Ala Gly Phe Asp Asp Thr
 130 135 140

Ser His Asp Thr Leu Ala Ile Arg Asp Gln Glu Glu Glu Lys Glu Gln
 145 150 155 160

Lys Lys Glu Gln Lys Glu Glu Gln Glu Glu Lys Glu Lys Glu Lys Glu
 165 170 175

Lys Gln Lys Glu Glu Glu Lys Glu Pro Glu Glu Glu Lys Thr Arg Ile
 180 185 190

Lys Ser Lys Ala Ser Leu Lys Ser Asp Ala Lys Ser Asn Pro Ile Pro
 195 200 205

Tyr Lys Asp Ile Leu Asp Tyr Leu Asn Glu Lys Ala Asn Lys Asn Phe
 210 215 220

Asn Pro Lys Ala Glu Gly His Arg Lys Leu Ile Arg Ala Arg Trp Asn
 225 230 235 240

Glu Gly Tyr Lys Leu Glu Asp Phe Lys Lys Val Ile Asp Asn Lys Thr
 245 250 255

Thr Gln Trp Phe Gly Lys Lys Ser Phe Asp Gly Lys Pro Leu Asp Gln
 260 265 270

Phe Leu Arg Pro Ser Thr Leu Phe Ala Gln Lys His Phe Asp Asn Tyr
 275 280 285

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Leu Asn Glu Thr Val Asn Ile Ser Asn Gln Gln His Gly Asp Gln Ile
 290 295 300

Val Ile Pro Gly Phe Arg Gly Glu Met Pro Phe
 305 310 315

<210> 71
 <211> 77
 <212> PRT
 <213> Bacillus anthracis

<400> 71

Met Lys Glu Val Lys Gly Lys Asn Thr Lys Leu Met Glu Glu Phe Asp
 1 5 10 15

Val Leu Leu Arg Gln Leu Leu Ile Lys Ser Lys Thr Asp Glu Arg Val
 20 25 30

Lys Asn Phe Leu Asp Asp Leu Phe Glu Met Leu Ser Asp Asn Lys Leu
 35 40 45

Gln Ser Asp Ile Asp Phe Lys Thr Ala Leu Asn Lys Leu Arg Glu Lys
 50 55 60

His Phe Pro Lys Phe Asp Lys Gly Glu Ser Lys Asn Asp
 65 70 75

<210> 72
 <211> 303
 <212> PRT
 <213> Bacillus anthracis

<400> 72

Val Lys Lys Ile Gln Asp Ser Phe Glu Lys Leu Thr Lys Leu Lys Phe
 1 5 10 15

Ala Asp Glu Gln Cys Asp Lys His Thr Phe Asn Lys His Gly Lys Glu
 20 25 30

Val Ile Lys Leu Val Arg Lys Met Ile Asp Asp Ala Gly Thr Val Tyr
 35 40 45

Cys Pro Arg Cys Met Val Glu Glu Gln Asn Ser Val Leu Phe Gln Gln
 50 55 60

Ala	Asn	Asn	His	Tyr	Lys	Lys	Ile	Asn	Arg	Glu	Arg	Lys	Lys	Asn	Val	65	70	75	80
Leu	Phe	Gln	His	Ser	Ile	Ile	Glu	Asn	Gln	Ser	Ile	Thr	Glu	Ser	Arg	85	90	95	
Leu	Ser	Thr	Tyr	Lys	Thr	Asp	Cys	Gln	Glu	Thr	Lys	Glu	Asn	Lys	Glu	100	105	110	
Lys	Ala	Ile	Lys	Ile	Leu	Glu	Arg	Ile	Lys	Asn	Gly	Glu	Phe	Leu	Asn	115	120	125	
Val	Tyr	Ile	Ala	Gly	Ile	Gln	Gly	Val	Gly	Lys	Ser	His	Leu	Ala	Tyr	130	135	140	
Ala	Met	Leu	Tyr	Glu	Leu	Val	Lys	His	Tyr	Trp	Val	Ile	Ser	Asp	Gly	145	150	155	160
Glu	Lys	Leu	Asn	Asp	Glu	His	Ala	Phe	Lys	Asn	Met	Lys	Ser	Cys	Leu	165	170	175	
Phe	Val	Glu	Ile	Glu	Lys	Leu	Ile	Arg	Leu	Ile	Gln	His	Ser	Phe	Arg	180	185	190	
Asn	Ile	Glu	Ser	Lys	Tyr	Thr	Met	Asp	Tyr	Cys	Ile	Ser	Leu	Met	Val	195	200	205	
Asp	Val	Asp	Phe	Leu	Val	Ile	Asp	Asp	Leu	Gly	Ala	Glu	Ser	Gly	Ser	210	215	220	
Met	Asn	Arg	Asn	Gly	Glu	Ala	Ser	Asp	Phe	Val	His	Lys	Ile	Leu	Tyr	225	230	235	240
Gly	Val	Thr	Asn	Gly	Arg	Gln	Gly	Ala	Asn	Lys	Thr	Thr	Ile	Thr	Thr	245	250	255	
Ser	Asn	Leu	Ser	Ser	Ala	Gln	Leu	Phe	Gln	Lys	Tyr	Asp	Pro	Lys	Leu	260	265	270	
Ala	Ser	Arg	Leu	Leu	Asn	Gly	Val	Ser	Lys	Asp	Glu	Thr	Ile	Val	Phe	275	280	285	

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Lys Thr Thr Thr Asp Lys Arg Ile Val Asn Leu Asp Ile Gly Phe
 290 295 300

<210> 73

<211> 248

<212> PRT

<213> Bacillus anthracis

<400> 73

Met Thr Lys Glu Lys Gly Gln Ala Lys Glu Val Val Asn Val Arg Gly
 1 5 10 15

Met Ser Asp Asp Glu Phe Ile Glu Lys Tyr Gly Arg Leu Val His His
 20 25 30

Cys Val Trp Lys Arg Tyr Ala Lys Lys Lys Ala Ser Ile Glu Arg Asp
 35 40 45

Thr Gly Leu Asp Ile Glu Asp Leu Thr Gln Phe Gly Met Ile Gly Leu
 50 55 60

Ile Lys Ala Arg Asp Asn Phe Asp Leu Glu Phe Gly Cys Ala Phe Ser
 65 70 75 80

Thr Tyr Ala Val Pro Lys Ile Ile Gly Glu Ile Gly Arg Ala Ile Arg
 85 90 95

Asp Asn Gln Lys Ile Lys Val Gln Arg Thr Val Tyr Gly Val Lys Gly
 100 105 110

Lys Ile Leu Asn Gln Gln Leu Ala Asp Lys Glu Pro Glu Glu Ile Ala
 115 120 125

Asp Ile Leu Asp Glu Ser Val Ser Leu Val Lys Thr Ala Leu Glu Tyr
 130 135 140

Gln Pro Ser Thr Asp Ser Leu Asn Lys Val Val Tyr Ala Ser Gly Ala
 145 150 155 160

Asn Glu Glu Leu Thr Leu Glu Arg Met Ile Glu Asp Thr Lys Thr Glu
 165 170 175

Asp Ile Glu Glu Thr Thr Ile Asn Arg Ala Val Ile Arg Glu Phe Lys

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180

185

190

Ala Ala Leu Pro Pro Lys Glu Tyr Ile Val Leu Asp Met Arg Leu Gln
 195 200 205

Asn Met Thr Gln Gln Asn Ile Ala Asn Gln Met Gly Tyr Ser Gln Val
 210 215 220

Gln Ile Ser Arg Ile Leu Ala Lys Ile Asn Gln Arg Ala Ala Gln Phe
 225 230 235 240

Gly Lys Glu Gly Gly Leu Gln Asp
 245

<210> 74
 <211> 77
 <212> PRT
 <213> Bacillus anthracis

<400> 74

Met Lys Glu Val Lys Gly Lys Asn Thr Lys Leu Met Glu Glu Phe Asp
 1 5 10 15

Val Leu Leu Arg Gln Leu Leu Ile Lys Ser Lys Thr Asp Glu Arg Val
 20 25 30

Lys Asn Phe Leu Asp Asp Leu Phe Glu Met Leu Ser Asp Asn Lys Leu
 35 40 45

Gln Ser Asp Ile Asp Phe Lys Thr Ala Leu Asn Lys Leu Arg Glu Lys
 50 55 60

His Phe Pro Lys Phe Asp Lys Gly Glu Ser Lys Asn Asp
 65 70 75

<210> 75
 <211> 158
 <212> PRT
 <213> Bacillus anthracis

<400> 75

Leu Ser Val Thr Lys Gly Val Cys Ile Asp Val Asp His Ser Asp Leu
 1 5 10 15

From the sequence of the amino acid sequence of the protein

Ile Lys Ala Arg Asp Asn Phe Asp Leu Glu Phe Gly Cys Ala Phe Ser
65 70 75 80

Thr Tyr Ala Val Pro Lys Ile Ile Gly Glu Ile Gly Arg Ala Ile Arg
85 90 95

Asp Asn Gln Lys Ile Lys Val Gln Arg Thr Val Tyr Gly Val Lys Gly
100 105 110

Lys Ile Leu Asn Gln Gln Leu Ala Asp Lys Glu Pro Glu Glu Ile Ala
115 120 125

Asp Ile Leu Asp Glu Ser Val Ser Leu Val Lys Thr Ala Leu Glu Tyr
130 135 140

Gln Pro Ser Thr Asp Ser Leu Asn Lys Val Val Tyr Ala Ser Gly Ala
145 150 155 160

Asn Glu Glu Leu Thr Leu Glu Arg Met Ile Glu Asp Thr Lys Thr Glu
165 170 175

Asp Ile Glu Glu Thr Thr Ile Asn Arg Ala Val Ile Arg Glu Phe Lys
180 185 190

Ala Ala Leu Pro Pro Lys Glu Tyr Ile Val Leu Asp Met Arg Leu Gln
195 200 205

Asn Met Thr Gln Gln Asn Ile Ala Asn Gln Met Gly Tyr Ser Gln Val
210 215 220

Gln Ile Ser Arg Ile Leu Ala Lys Ile Asn Gln Arg Ala Ala Gln Phe
225 230 235 240

Gly Lys Glu Gly Gly Leu Gln Asp
245

<210> 77

<211> 180

<212> PRT

<213> Bacillus anthracis

<400> 77

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Met Asp Ile Lys Lys Leu Phe Ala Met Gln Asn Ile Leu Asp Lys Arg
 1 5 10 15

Val Leu Glu Ser Lys Asn Leu Ser Arg Gly Glu Val Phe Glu Phe Arg
 20 25 30

Ile Leu Ala Phe Leu Asp Glu Leu Gly Glu Cys Met Lys Glu Trp Arg
 35 40 45

Val Phe Lys Phe Trp Ser Asp Asp Arg Lys Pro Arg Thr Ser Ile Pro
 50 55 60

Thr Gly Glu Ile Ile Val Leu Asp Asp Gly Tyr Glu Val Glu Val Tyr
 65 70 75 80

Lys Asn Pro Leu Leu Glu Glu Tyr Val Asp Gly Leu His Phe Ala Ile
 85 90 95

Gly Leu Cys Ile Asp Leu Lys Thr Glu Ile Asn Phe Pro Ala Ser Met
 100 105 110

Arg Cys Glu Thr Val Thr Glu Gln Phe Phe Glu Leu Tyr His Leu Ala
 115 120 125

Ile Arg Leu Lys Glu Glu Pro Thr Ala Phe Arg Ala Asp Val Leu Leu
 130 135 140

Ser His Tyr Leu Gly Leu Gly Glu Leu Leu Cys Phe Ser Leu Glu Glu
 145 150 155 160

Ile Gly His Glu Tyr Ile Glu Lys Asn Lys Ile Asn His Glu Arg Gln
 165 170 175

Ser Asn Gly Tyr
 180

<210> 78
 <211> 158
 <212> PRT
 <213> Bacillus anthracis

<400> 78

Leu Ser Val Thr Lys Gly Val Cys Ile Asp Val Asp His Ser Asp Leu
 1 5 10 15

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Leu His Glu Lys Val Glu Tyr Phe Leu Phe Pro Ala Lys Pro Ser His
 20 25 30

Tyr Tyr Val Ser Arg Phe Asn Arg Lys Gly Ala His Phe Gly Cys Tyr
 35 40 45

Gln Ala Glu Arg Phe Gln Ile Thr Glu Lys Glu Val Trp Thr Pro Glu
 50 55 60

Pro Gln Pro Asn Leu Pro Glu Leu Asn Thr Ser Leu Phe Tyr Arg Ala
 65 70 75 80

Gln Leu Ile Trp Arg Lys Lys Gly Tyr Lys Asp Lys Pro Leu Lys Asp
 85 90 95

Tyr Ile Val Gln Pro Arg Gly Lys His Cys Tyr Phe Trp His Asp Arg
 100 105 110

Glu Arg Lys Lys Phe Cys Gly Cys Phe Pro Leu His Trp Phe Thr Asp
 115 120 125

Phe Val Pro Val Gln Ser His His Ile Glu Glu Lys Thr Arg Glu Glu
 130 135 140

Val Lys Leu Leu Gln Arg Pro Asp Gly Gln Leu Ala Phe Phe
 145 150 155

<210> 79
 <211> 76
 <212> PRT
 <213> Bacillus anthracis

<400> 79

Met Arg Val Ile Glu Ile Ser Trp Trp Ala Ile Ala Ile Gly Leu Tyr
 1 5 10 15

Leu Leu Ile Gly Val Ala Leu Leu Ile Trp Ile Ile Ala Thr Asp Ser
 20 25 30

Trp Gly Ser Leu Phe Leu Tyr Pro Val Phe Ala Val Val Ile Val Leu
 35 40 45

Patent application of the International Bureau of the World Intellectual Property Organization

Gly Trp Leu Pro Leu Met Ile Arg Ser Ile Val Gln Glu Ile Ser Lys
50 55 60

Ala Ile His Lys Trp Lys Arg Lys Gln Lys Thr Glu
65 70 75

<210> 80

<211> 180

<212> PRT

<213> Bacillus anthracis

<400> 80

Met Asp Ile Lys Lys Leu Phe Ala Met Gln Asn Ile Leu Asp Lys Arg
1 5 10 15

Val Leu Glu Ser Lys Asn Leu Ser Arg Gly Glu Val Phe Glu Phe Arg
20 25 30

Ile Leu Ala Phe Leu Asp Glu Leu Gly Glu Cys Met Lys Glu Trp Arg
35 40 45

Val Phe Lys Phe Trp Ser Asp Asp Arg Lys Pro Arg Thr Ser Ile Pro
50 55 60

Thr Gly Glu Ile Ile Val Leu Asp Asp Gly Tyr Glu Val Glu Val Tyr
65 70 75 80

Lys Asn Pro Leu Leu Glu Glu Tyr Val Asp Gly Leu His Phe Ala Ile
85 90 95

Gly Leu Cys Ile Asp Leu Lys Thr Glu Ile Asn Phe Pro Ala Ser Met
100 105 110

Arg Cys Glu Thr Val Thr Glu Gln Phe Phe Glu Leu Tyr His Leu Ala
115 120 125

Ile Arg Leu Lys Glu Glu Pro Thr Ala Phe Arg Ala Asp Val Leu Leu
130 135 140

Ser His Tyr Leu Gly Leu Gly Glu Leu Leu Cys Phe Ser Leu Glu Glu
145 150 155 160

Ile Gly His Glu Tyr Ile Glu Lys Asn Lys Ile Asn His Glu Arg Gln
165 170 175

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Ser Asn Gly Tyr
180

<210> 81
<211> 156
<212> PRT
<213> Bacillus anthracis

<400> 81

Met Ser Gly Cys Thr Ile Val Asn Val Lys Ile Asn Lys Gln Lys Arg
1 5 10 15

Gly Met Lys Asp Met Lys Trp Met Tyr Asn Leu Asp Ser Asn Asn Glu
20 25 30

Ile Trp Thr Ser Asp Lys Phe Glu Met Lys Glu Glu Ala Ile Gln Ala
35 40 45

Ala Leu Lys Asp Trp Thr Asp Lys Met Val Ala Asp Arg Ala Ala Val
50 55 60

Asp Asn Glu Phe Gln Ile Gly Gln Phe Lys Gln Tyr Ser Pro Trp Ile
65 70 75 80

Asn Ala Asp Val Leu Leu Asp Glu Leu Tyr Glu Arg Ala Thr Asp Glu
85 90 95

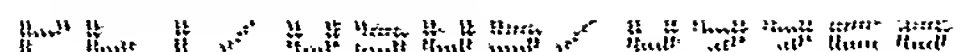
Cys Gly Glu Val Ala Glu Tyr Trp Leu Ser Gly Val Pro Met Asp Glu
100 105 110

Gly Glu Lys Leu Gln Glu Gln Ile Asn Lys Val Val Thr Glu Trp Leu
115 120 125

Lys Gly Ile Asn Glu His Pro Ser Phe Gly Ser Ile Glu Asn Ile Glu
130 135 140

Thr Ile Asp Ala Ser Lys Ile Glu Tyr Lys Glu Asn
145 150 155

<210> 82
<211> 310
<212> PRT
<213> Bacillus anthracis



<400> 82

Met	Asp	Cys	Phe	Lys	Lys	Gly	Lys	Phe	Ile	Pro	Phe	Pro	Cys	Ala	Leu
1				5					10					15	
Pro	Ile	Pro	Glu	Ala	Gly	Pro	Thr	Gly	Pro	Thr	Gly	Pro	Pro	Gly	Ser
			20					25					30		
Ala	Gly	Gly	Ser	Thr	Gly	Pro	Thr	Gly	Pro	Thr	Gly	Pro	Gln	Gly	Leu
	35						40					45			
Gln	Gly	Ile	Gln	Gly	Val	Gln	Gly	Asn	Pro	Gly	Thr	Thr	Gly	Pro	Gln
50						55					60				
Gly	Ile	Gln	Gly	Ile	Gln	Gly	Ile	Pro	Gly	Val	Ser	Gly	Pro	Ile	Gly
65					70					75					80
Pro	Ile	Gly	Pro	Thr	Gly	Ile	Gln	Gly	Val	Gln	Gly	Ile	Gln	Gly	Phe
				85					90					95	
Pro	Gly	Ile	Pro	Gly	Pro	Met	Gly	Pro	Ile	Gly	Leu	Thr	Gly	Pro	Thr
			100					105					110		
Gly	Ile	Gln	Gly	Ile	Gln	Gly	Ile	Gln	Gly	Val	Gln	Gly	Ile	Gln	Gly
	115						120					125			
Ile	Gln	Gly	Asp	Val	Gly	Pro	Thr	Gly	Pro	Gln	Gly	Ile	Pro	Gly	Ile
130						135					140				
Pro	Gly	Leu	Thr	Gly	Pro	Thr	Gly	Ser	Gln	Gly	Val	Thr	Gly	Val	Thr
145					150					155					160
Gly	Pro	Ser	Gly	Gly	Pro	Pro	Gly	Pro	Thr	Gly	Ala	Thr	Gly	Pro	Thr
				165					170					175	
Gly	Pro	Ala	Gly	Gly	Pro	Pro	Gly	Pro	Thr	Gly	Pro	Thr	Gly	Pro	Ala
			180					185					190		
Gly	Gly	Pro	Thr	Gly	Leu	Thr	Gly	Pro	Thr	Gly	Pro	Thr	Gly	Pro	Thr
	195						200					205			
Gly	Ile	Gln	Gly	Ile	Gln	Gly	Val	Gln	Gly	Thr	Gln	Gly	Ile	Pro	Gly
210						215					220				

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Pro Thr Gly Pro Gln Gly Ile Gln Gly Val Gln Gly Leu Gln Gly Ile
 225 230 235 240

Pro Gly Ile Pro Gly Ser Met Gly Pro Thr Gly Leu Thr Gly Pro Thr
 245 250 255

Gly Leu Gln Gly Ile Gln Gly Ile Gln Gly Asn Pro Gly Pro Thr Gly
 260 265 270

Pro Phe Gly Pro Thr Gly Pro Thr Gly Leu Gln Gly Ile Gln Gly Leu
 275 280 285

Gln Gly Ile Gln Gly Ile Pro Gly Ser Asn Arg Thr Ser Arg Asn Pro
 290 295 300

Arg Ser Asn Arg Thr Cys
 305 310

<210> 83
 <211> 129
 <212> PRT
 <213> Bacillus anthracis

<400> 83

Met Tyr Gln Thr Trp Lys Asn Leu Leu Asn Ser Ile Lys Lys Ile Leu
 1 5 10 15

Gln Ala Lys Leu Leu Val Lys Gly Arg Lys Leu Ala Tyr Phe Asp Leu
 20 25 30

Asn Gly Leu Trp Ile Ala Leu Asn Val Glu Glu Asp Ile Pro Arg Asn
 35 40 45

Glu Ile Lys Gln Ser Tyr Thr His Met Ala Phe Thr Val Thr Asn Glu
 50 55 60

Ala Leu Asp His Leu Lys Glu Val Leu Ile Gln Asn Asp Val Asn Ile
 65 70 75 80

Leu Pro Gly Arg Glu Arg Asp Glu Arg Asp Gln Arg Ser Leu Tyr Phe
 85 90 95

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Thr Asp Pro Asp Gly His Lys Phe Glu Phe His Thr Gly Thr Leu Gln
 100 105 110

Asn Arg Leu Glu Tyr Tyr Lys Glu Asp Lys Lys His Met Thr Phe Tyr
 115 120 125

Ile

<210> 84
 <211> 163
 <212> PRT
 <213> Bacillus anthracis

<400> 84

Leu Leu Ala His Phe Pro Gln Lys Leu Phe Phe Phe Gly Gly Thr Asn
 1 5 10 15

Ser Gly Phe Gln Arg Ile Ala Gly Ser Pro Gly Ala Asp Ser Gln Asp
 20 25 30

Ile Pro Tyr Val Leu Gly Gly Ala Gly Ser Val Val Gly Leu Ser Ala
 35 40 45

Ser Ile Ser Ile Asn Asn Leu Pro Ile Gly Val Tyr Thr Ile Arg Val
 50 55 60

Cys Lys Asn Val Pro Ile Asn Leu Ala Ala Pro Gly Pro Gly Gln Val
 65 70 75 80

Ile Ser Thr Ile Ile Leu Thr Thr Thr Ala Val Ile Ser Gly Thr Ile
 85 90 95

Ile Leu Thr Ile Asn Pro Ser Asp Ile Gly Ala Gln Pro Val Arg Val
 100 105 110

Phe Asn Pro Asn Leu Val Ile Ala Pro Ala Thr Val Ala Trp Ser Ser
 115 120 125

Thr Ile Pro Gly Asp Ile Val Ala Arg Gly Asp Ala Met Ser Leu Phe
 130 135 140

Ile Thr Pro Gly Ile Thr Gln Asn Ala Val Tyr Thr Val Phe Leu His
 145 150 155 160

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Thr Gly Asn

<210> 85
 <211> 56
 <212> PRT
 <213> Bacillus anthracis

<400> 85

Met Ile Val Lys Ala Thr Ile Lys Leu Glu Leu Asp Asp Ser Gln Lys
 1 5 10 15

Asn Trp Val Ser Tyr Val Arg Glu Gln Gly Gly Glu Glu Ala Val Phe
 20 25 30

His Tyr Leu Glu Glu Glu Val Gln Lys Lys Ile Glu Leu Ala Asp Phe
 35 40 45

Val Glu Met Lys Tyr Lys Asn Lys
 50 55

<210> 86
 <211> 191
 <212> PRT
 <213> Bacillus anthracis

<400> 86

Met Gln His Ile Pro Arg Tyr Tyr Tyr Gln Ser Gln Ser Pro Met Asp
 1 5 10 15

Ser Ile Trp Asn Asn Asn Asn Trp Ile Tyr Ala Trp Asn Pro Tyr Tyr
 20 25 30

Tyr Asn Tyr Asn Asn Asn Ala Trp Asn Arg Asn Arg Asn Pro Tyr Cys
 35 40 45

Glu Asn Val Arg Leu Thr Asp Tyr Gly Ala Arg Pro Phe Val Leu Asn
 50 55 60

Ile Asn Gln Ala Thr Lys Gln Asn Asn Thr Tyr Arg Thr Ala Ile Trp
 65 70 75 80

Thr Gly Lys Asn Leu Gln Val Thr Leu Met Ser Ile Asn Val Gly Asp

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85

90

95

Asp Ile Gly Leu Glu Val His Pro Thr Thr Asp Gln Phe Ile Arg Ile
100 105 110

Glu Glu Gly Gln Gly Leu Val Gln Met Gly Asp Asn Lys Asp Lys Leu
115 120 125

Asp Phe Gln Glu Met Val Tyr Asp Asp Tyr Ala Ile Met Ile Pro Ala
130 135 140

Gly Lys Trp His Asn Val Ile Asn Thr Gly Asn Thr Pro Leu Lys Ile
145 150 155 160

Tyr Ala Ile Tyr Ala Pro Pro Glu His Pro Tyr Gly Thr Val His Glu
165 170 175

Thr Lys Ala Ile Ala Met Ser Thr Glu Ala Asn Arg Tyr Tyr Tyr
180 185 190

<210> 87

<211> 101

<212> PRT

<213> Bacillus anthracis

<400> 87

Met Asp Met Ser Leu Val Gly Asn Leu Lys Glu Leu Gln Glu Lys Ala
1 5 10 15

Ile Asp Glu Lys Val Leu Glu Phe Ala Glu Glu Met Glu Ile Val Ile
20 25 30

Thr Lys Ser Ala Ala Ser Gly Tyr Ser Gly His Arg Tyr Lys Ile His
35 40 45

Asn Glu Asn Pro Asn Arg His Met Met Cys Ser Lys Ile Phe Ile Glu
50 55 60

Lys Leu Gln Glu Leu Leu Asp Gly Val Lys Val Glu Phe Lys Glu Glu
65 70 75 80

Glu Lys Lys Asn Ile Leu Gly Gly Ser Tyr Tyr Glu His Tyr Ile Arg
85 90 95

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Phe Lys Trp Asn Asp
100

<210> 88
<211> 56
<212> PRT
<213> Bacillus anthracis

<400> 88

Met Ile Val Lys Ala Thr Ile Lys Leu Glu Leu Asp Asp Ser Gln Lys
1 5 10 15

Asn Trp Val Ser Tyr Val Arg Glu Gln Gly Gly Glu Glu Ala Val Phe
20 25 30

His Tyr Leu Glu Glu Glu Val Gln Lys Lys Ile Glu Leu Ala Asp Phe
35 40 45

Val Glu Met Lys Tyr Lys Asn Lys
50 55

<210> 89
<211> 79
<212> PRT
<213> Bacillus anthracis

<400> 89

Met Thr Asn Phe Leu Leu Lys Ile Leu Phe Trp Arg Lys Gly Val Glu
1 5 10 15

Arg Met Lys Thr Phe Asn Val Thr Phe Thr Glu Leu Lys Ile Tyr Glu
20 25 30

Ala Val Ile Glu Ala Glu Ser Ala Glu Lys Ile Ile Asp Val Ile Lys
35 40 45

His Leu Lys Arg Thr Glu Asp Asp Leu Val Asp Lys Gly Val Ile Ile
50 55 60

Asn Glu Val Ser Glu Ile Asn Val Ser Lys Glu Gln Lys Phe Glu
65 70 75

<210> 90
<211> 101

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<212> PRT

<213> Bacillus anthracis

<400> 90

Met Asp Met Ser Leu Val Gly Asn Leu Lys Glu Leu Gln Glu Lys Ala
 1 5 10 15

Ile Asp Glu Lys Val Leu Glu Phe Ala Glu Glu Met Glu Ile Val Ile
 20 25 30

Thr Lys Ser Ala Ala Ser Gly Tyr Ser Gly His Arg Tyr Lys Ile His
 35 40 45

Asn Glu Asn Pro Asn Arg His Met Met Cys Ser Lys Ile Phe Ile Glu
 50 55 60

Lys Leu Gln Glu Leu Leu Asp Gly Val Lys Val Glu Phe Lys Glu Glu
 65 70 75 80

Glu Lys Lys Asn Ile Leu Gly Gly Ser Tyr Tyr Glu His Tyr Ile Arg
 85 90 95

Phe Lys Trp Asn Asp
 100

<210> 91

<211> 135

<212> PRT

<213> Bacillus anthracis

<400> 91

Val Asn His His Leu Phe Asn Trp Leu Arg Asp Tyr Gln Lys Leu Glu
 1 5 10 15

Glu Asp Ile Ala Tyr Leu Glu Tyr Asn Leu Asp Lys Thr Lys Ala Glu
 20 25 30

Leu Arg Arg Trp Val Ser Gly Asp Leu Arg Glu Val Arg Leu Thr Ala
 35 40 45

Glu Ser Glu Gly Ala Lys Val Glu Asn Arg Ile Glu Ala Ile Glu Tyr
 50 55 60

Glu Leu Ala His Lys Met Asn Asp Met Tyr Lys Leu Lys Lys Leu Ile

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65

70

75

80

Ser Lys Phe Arg Gly Leu Glu Asn Gln Ile Leu Lys Leu Lys Tyr Val
 85 90 95

Asp Gly Met Thr Leu Glu Glu Ile Ala Glu Ala Val Asn Tyr Ser Ser
 100 105 110

Ser His Ile Lys Lys Lys His Ala Glu Leu Val Arg Leu Ile Lys Phe
 115 120 125

Val Glu Arg Glu Gly Val Ile
 130 135

<210> 92

<211> 79

<212> PRT

<213> Bacillus anthracis

<400> 92

Met Thr Asn Phe Leu Leu Lys Ile Leu Phe Trp Arg Lys Gly Val Glu
 1 5 10 15

Arg Met Lys Thr Phe Asn Val Thr Phe Thr Glu Leu Lys Ile Tyr Glu
 20 25 30

Ala Val Ile Glu Ala Glu Ser Ala Glu Lys Ile Ile Asp Val Ile Lys
 35 40 45

His Leu Lys Arg Thr Glu Asp Asp Leu Val Asp Lys Gly Val Ile Ile
 50 55 60

Asn Glu Val Ser Glu Ile Asn Val Ser Lys Glu Gln Lys Phe Glu
 65 70 75

<210> 93

<211> 74

<212> PRT

<213> Bacillus anthracis

<400> 93

Met Asp Val Gln Glu Leu Ser Arg Arg Leu Glu Asn Leu Glu His Lys
 1 5 10 15

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Val Leu Gln Val Glu Thr Lys Ala Asp Val Leu Asn Arg Thr Ala Ile
 20 25 30

Gln Lys Gly Asp Lys Ile Lys Val Val Tyr Pro His Leu Gly Ile Gln
 35 40 45

Gly Glu Tyr Leu Val Glu Lys Ile Asp Asn Gly Val Leu Glu Leu Val
 50 55 60

Ala Glu Glu Thr Met Lys Lys Ile Gln Glu
 65 70

<210> 94

<211> 135

<212> PRT

<213> Bacillus anthracis

<400> 94

Val Asn His His Leu Phe Asn Trp Leu Arg Asp Tyr Gln Lys Leu Glu
 1 5 10 15

Glu Asp Ile Ala Tyr Leu Glu Tyr Asn Leu Asp Lys Thr Lys Ala Glu
 20 25 30

Leu Arg Arg Trp Val Ser Gly Asp Leu Arg Glu Val Arg Leu Thr Ala
 35 40 45

Glu Ser Glu Gly Ala Lys Val Glu Asn Arg Ile Glu Ala Ile Glu Tyr
 50 55 60

Glu Leu Ala His Lys Met Asn Asp Met Tyr Lys Leu Lys Lys Leu Ile
 65 70 75 80

Ser Lys Phe Arg Gly Leu Glu Asn Gln Ile Leu Lys Leu Lys Tyr Val
 85 90 95

Asp Gly Met Thr Leu Glu Glu Ile Ala Glu Ala Val Asn Tyr Ser Ser
 100 105 110

Ser His Ile Lys Lys Lys His Ala Glu Leu Val Arg Leu Ile Lys Phe
 115 120 125

Val Glu Arg Glu Gly Val Ile
 130 135

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<210> 95
 <211> 73
 <212> PRT
 <213> Bacillus anthracis

<400> 95

Leu Lys Lys Leu Ser Lys Gln Glu Leu Ala Ala Val Met Thr His Cys
 1 5 10 15

Ile Ser Thr Leu Gly Glu Gln Ile Val Asn Glu His Ile Asn Pro Gln
 20 25 30

Lys Leu Ala Gln Ala Ser Ala Leu His Asn Asp Leu Phe Asp Asn Thr
 35 40 45

Thr Pro Lys Glu Arg Arg Glu Ala Thr Ile Ser Leu Leu Gly Lys Ala
 50 55 60

Ile Asp Glu Phe Leu Glu Ser Lys Glu
 65 70

<210> 96
 <211> 74
 <212> PRT
 <213> Bacillus anthracis

<400> 96

Met Asp Val Gln Glu Leu Ser Arg Arg Leu Glu Asn Leu Glu His Lys
 1 5 10 15

Val Leu Gln Val Glu Thr Lys Ala Asp Val Leu Asn Arg Thr Ala Ile
 20 25 30

Gln Lys Gly Asp Lys Ile Lys Val Val Tyr Pro His Leu Gly Ile Gln
 35 40 45

Gly Glu Tyr Leu Val Glu Lys Ile Asp Asn Gly Val Leu Glu Leu Val
 50 55 60

Ala Glu Glu Thr Met Lys Lys Ile Gln Glu
 65 70

<210> 97

PCT/US2005/009928

<211> 134

<212> PRT

<213> Bacillus anthracis

<400> 97

Met Gly Lys Gly Tyr Phe Asn Lys Ala Val Cys Leu Val Cys Gly His
 1 5 10 15

Gln Asp Arg Val Asn His Pro Ser Lys Lys Glu Tyr Gln Glu Val Thr
 20 25 30

Val Cys Pro Glu Cys Asn Gly Ala Phe Val Asp Val Trp Lys Leu Gly
 35 40 45

Lys Tyr Lys Arg Asn Thr Gln Ser Asn Glu Glu Pro Leu Leu Thr Ile
 50 55 60

Thr Leu Thr Asp Ile Asp Ala Lys Pro Ile Val His Tyr Lys Gly Glu
 65 70 75 80

Gln Ile Asp Arg Lys Leu Arg Val Thr Phe Asp Trp Glu Ser Gln Ser
 85 90 95

Ile Asp Lys Ile Asn Arg Thr Tyr Ile His Ile Glu His Val Pro Ala
 100 105 110

Asp Asn Lys Arg Leu Asn Thr Glu Thr Ile Gln His Asn His Pro Ile
 115 120 125

Ala Asn Lys Glu Gln Val
 130

<210> 98

<211> 73

<212> PRT

<213> Bacillus anthracis

<400> 98

Leu Lys Lys Leu Ser Lys Gln Glu Leu Ala Ala Val Met Thr His Cys
 1 5 10 15

Ile Ser Thr Leu Gly Glu Gln Ile Val Asn Glu His Ile Asn Pro Gln
 20 25 30

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Lys Leu Ala Gln Ala Ser Ala Leu His Asn Asp Leu Phe Asp Asn Thr
35 40 45

Thr Pro Lys Glu Arg Arg Glu Ala Thr Ile Ser Leu Leu Gly Lys Ala
50 55 60

Ile Asp Glu Phe Leu Glu Ser Lys Glu
65 70

<210> 99
<211> 63
<212> PRT
<213> Bacillus anthracis

<400> 99

Met Asn Gly Phe Asn Lys Ile Val Asn Asp Met Gln Asn Glu Gln Val
1 5 10 15

Gly Asn Ala Met Leu Asp Phe Ala Leu Ala Ala Lys Met Met Phe Ala
20 25 30

Ala Phe Thr Gln Phe Lys Glu Ala Gly Phe Asn Glu Glu Gln Ser Phe
35 40 45

Glu Leu Thr Arg Glu Ile Leu Ile Asp Ser Leu Ser Lys Asn Gln
50 55 60

<210> 100
<211> 134
<212> PRT
<213> Bacillus anthracis

<400> 100

Met Gly Lys Gly Tyr Phe Asn Lys Ala Val Cys Leu Val Cys Gly His
1 5 10 15

Gln Asp Arg Val Asn His Pro Ser Lys Lys Glu Tyr Gln Glu Val Thr
20 25 30

Val Cys Pro Glu Cys Asn Gly Ala Phe Val Asp Val Trp Lys Leu Gly
35 40 45

Lys Tyr Lys Arg Asn Thr Gln Ser Asn Glu Glu Pro Leu Leu Thr Ile
50 55 60

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Thr Leu Thr Asp Ile Asp Ala Lys Pro Ile Val His Tyr Lys Gly Glu
65 70 75 80

Gln Ile Asp Arg Lys Leu Arg Val Thr Phe Asp Trp Glu Ser Gln Ser
85 90 95

Ile Asp Lys Ile Asn Arg Thr Tyr Ile His Ile Glu His Val Pro Ala
100 105 110

Asp Asn Lys Arg Leu Asn Thr Glu Thr Ile Gln His Asn His Pro Ile
115 120 125

Ala Asn Lys Glu Gln Val
130

<210> 101
<211> 84
<212> PRT
<213> Bacillus anthracis

<400> 101

Met Gln Val Tyr Cys Ser Glu Cys Asp Lys Ser Tyr Asp Met Gln Pro
1 5 10 15

Gln Val Thr Gln Leu Pro Asn Arg Ile Glu Lys Cys Phe Phe Ile Cys
20 25 30

Pro His Cys Asn His Glu His Ile Ala Ala Tyr Val Asn Asp Lys Ile
35 40 45

Arg Lys Tyr Gln Ala Asp Ile Ala Lys Cys His Glu Arg Ile Asn Lys
50 55 60

Lys Asn Leu Ala Ile Glu Asp Glu Met Lys Arg Leu Arg Lys Arg Phe
65 70 75 80

Asp Arg Arg Lys

<210> 102
<211> 63
<212> PRT
<213> Bacillus anthracis

~~PCT/US2005/009928~~

<400> 102

Met Asn Gly Phe Asn Lys Ile Val Asn Asp Met Gln Asn Glu Gln Val
1 5 10 15

Gly Asn Ala Met Leu Asp Phe Ala Leu Ala Ala Lys Met Met Phe Ala
20 25 30

Ala Phe Thr Gln Phe Lys Glu Ala Gly Phe Asn Glu Glu Gln Ser Phe
35 40 45

Glu Leu Thr Arg Glu Ile Leu Ile Asp Ser Leu Ser Lys Asn Gln
50 55 60

<210> 103

<211> 63

<212> PRT

<213> Bacillus anthracis

<400> 103

Met Glu Gly Gln Glu Leu Thr Leu Glu Lys Lys Asp Ser Ile Tyr Leu
1 5 10 15

Arg Pro Arg Tyr Pro His Lys Ile Asp Ala Ser Lys Ile Lys Ser Leu
20 25 30

Lys Asp Val Ile Lys Ile Leu Gly Leu Met Asp Ile Arg Leu Asp Asp
35 40 45

Lys Ala Val Ile Gly Leu Glu His Leu Ile Glu Lys Glu Glu Glu
50 55 60

<210> 104

<211> 84

<212> PRT

<213> Bacillus anthracis

<400> 104

Met Gln Val Tyr Cys Ser Glu Cys Asp Lys Ser Tyr Asp Met Gln Pro
1 5 10 15

Gln Val Thr Gln Leu Pro Asn Arg Ile Glu Lys Cys Phe Phe Ile Cys
20 25 30

Pro His Cys Asn His Glu His Ile Ala Ala Tyr Val Asn Asp Lys Ile

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35 40 45

Arg Lys Tyr Gln Ala Asp Ile Ala Lys Cys His Glu Arg Ile Asn Lys
50 55 60

Lys Asn Leu Ala Ile Glu Asp Glu Met Lys Arg Leu Arg Lys Arg Phe
65 70 75 80

Asp Arg Arg Lys

<210> 105
<211> 95
<212> PRT
<213> Bacillus anthracis

<400> 105

Leu Lys Arg Arg Lys Asn Lys Met Ala Asn Asn Lys Leu Ile Ile Glu
1 5 10 15

Val Thr Ala Asp Thr Thr Glu Ala Leu Glu Gly Ile Lys Glu Val Thr
20 25 30

Glu Ala Ala Asn Glu Cys Ala Asp Ala Leu Asp Lys Leu Glu Lys Ile
35 40 45

Met Asp Lys Phe Thr Asn Arg Ser Asp Thr Val Glu Leu Tyr Cys Glu
50 55 60

Gly Lys Leu Leu Ser Lys Ser Thr Val Asn His Thr Ala Asp Ser Ile
65 70 75 80

Gln Cys Arg Ile Ile Lys Gly Glu Glu Leu Gly Gly Ser Glu Arg
85 90 95

<210> 106
<211> 63
<212> PRT
<213> Bacillus anthracis

<400> 106

Met Glu Gly Gln Glu Leu Thr Leu Glu Lys Lys Asp Ser Ile Tyr Leu
1 5 10 15

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Arg Pro Arg Tyr Pro His Lys Ile Asp Ala Ser Lys Ile Lys Ser Leu
 20 25 30

Lys Asp Val Ile Lys Ile Leu Gly Leu Met Asp Ile Arg Leu Asp Asp
 35 40 45

Lys Ala Val Ile Gly Leu Glu His Leu Ile Glu Lys Glu Glu Glu
 50 55 60

<210> 107
 <211> 127
 <212> PRT
 <213> Bacillus anthracis

<400> 107

Met Lys Lys Pro Leu Arg Pro Cys Cys Glu Phe His Cys Tyr Asn Leu
 1 5 10 15

Thr Arg Glu Arg Tyr Cys Glu Glu His Arg Tyr Lys Glu Lys Glu Thr
 20 25 30

Gln Gln Asp Lys Asn Arg Tyr Tyr Asp Arg Phe Lys Arg Asp Lys Glu
 35 40 45

Ser Thr Ala Phe Tyr Arg Ser Lys Ala Trp Glu Arg Leu Arg Glu Gln
 50 55 60

Ala Leu Met Arg Asp Lys Gly Leu Cys Leu His Cys Lys Asn Asn Arg
 65 70 75 80

Lys Ile Lys Val Ala Asp Met Val Asp His Ile Ile Pro Ile Lys Val
 85 90 95

Asp Pro Ser Leu Lys Leu Lys Leu Glu Asn Leu Gln Ser Leu Cys Asn
 100 105 110

Pro Cys His Asn Arg Lys Thr Ala Glu Asp Lys Lys Lys Tyr Gly
 115 120 125

<210> 108
 <211> 95
 <212> PRT
 <213> Bacillus anthracis

<400> 108

PCT/US2005/009928

Leu Lys Arg Arg Lys Asn Lys Met Ala Asn Asn Lys Leu Ile Ile Glu
 1 5 10 15

Val Thr Ala Asp Thr Thr Glu Ala Leu Glu Gly Ile Lys Glu Val Thr
 20 25 30

Glu Ala Ala Asn Glu Cys Ala Asp Ala Leu Asp Lys Leu Glu Lys Ile
 35 40 45

Met Asp Lys Phe Thr Asn Arg Ser Asp Thr Val Glu Leu Tyr Cys Glu
 50 55 60

Gly Lys Leu Leu Ser Lys Ser Thr Val Asn His Thr Ala Asp Ser Ile
 65 70 75 80

Gln Cys Arg Ile Ile Lys Gly Glu Glu Leu Gly Gly Ser Glu Arg
 85 90 95

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 <211> 127
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<400> 109

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Thr Arg Glu Arg Tyr Cys Glu Glu His Arg Tyr Lys Glu Lys Glu Thr
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Gln Gln Asp Lys Asn Arg Tyr Tyr Asp Arg Phe Lys Arg Asp Lys Glu
 35 40 45

Ser Thr Ala Phe Tyr Arg Ser Lys Ala Trp Glu Arg Leu Arg Glu Gln
 50 55 60

Ala Leu Met Arg Asp Lys Gly Leu Cys Leu His Cys Lys Asn Asn Arg
 65 70 75 80

Lys Ile Lys Val Ala Asp Met Val Asp His Ile Ile Pro Ile Lys Val
 85 90 95

Asp Pro Ser Leu Lys Leu Lys Leu Glu Asn Leu Gln Ser Leu Cys Asn

PCT/US2005/009928

100

105

110

Pro Cys His Asn Arg Lys Thr Ala Glu Asp Lys Lys Lys Tyr Gly
 115 120 125